The PHOTOFACT Servicer

SET 458 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ OCT., 1959

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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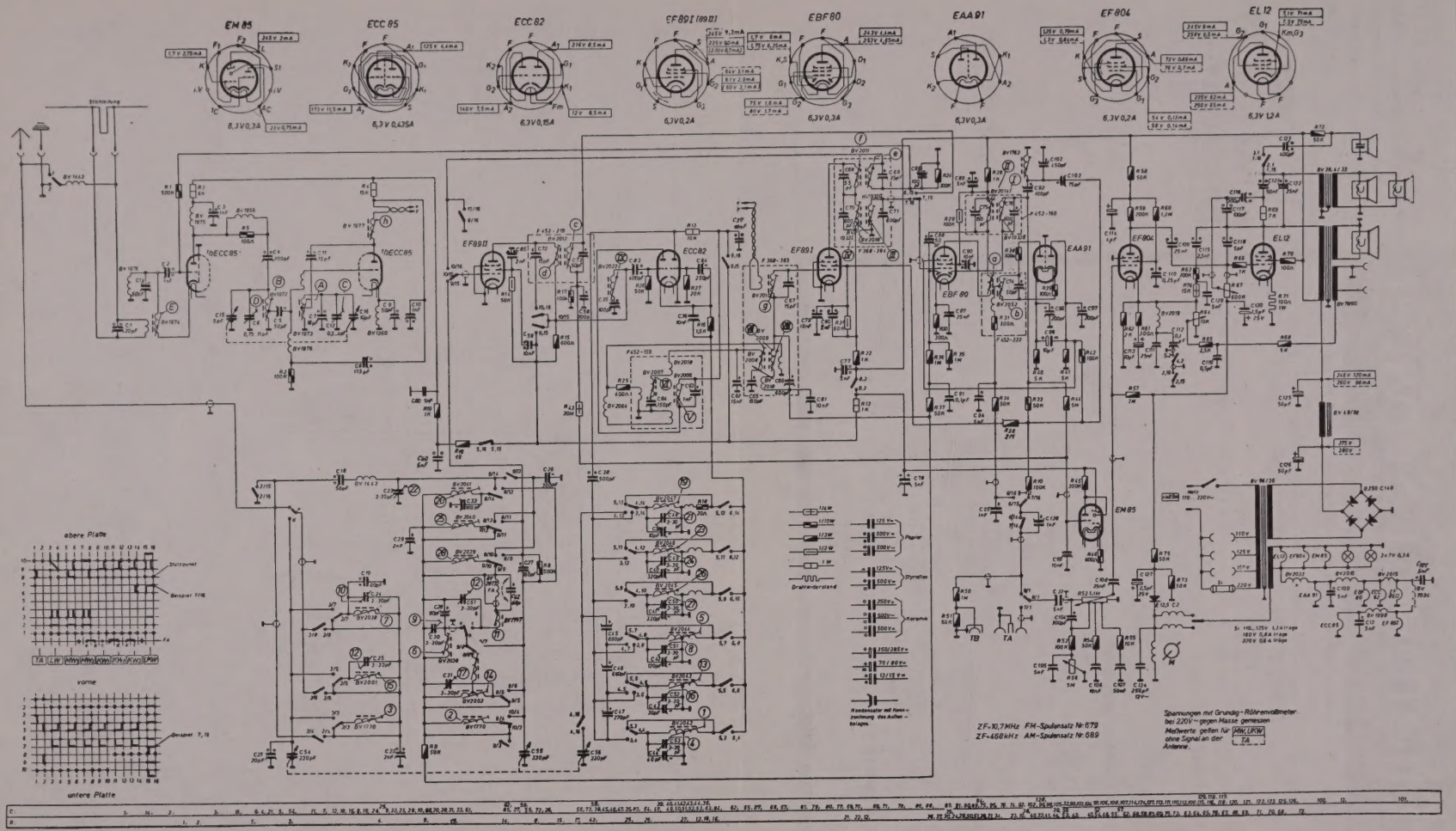
Airline Model

15GHM-1552A

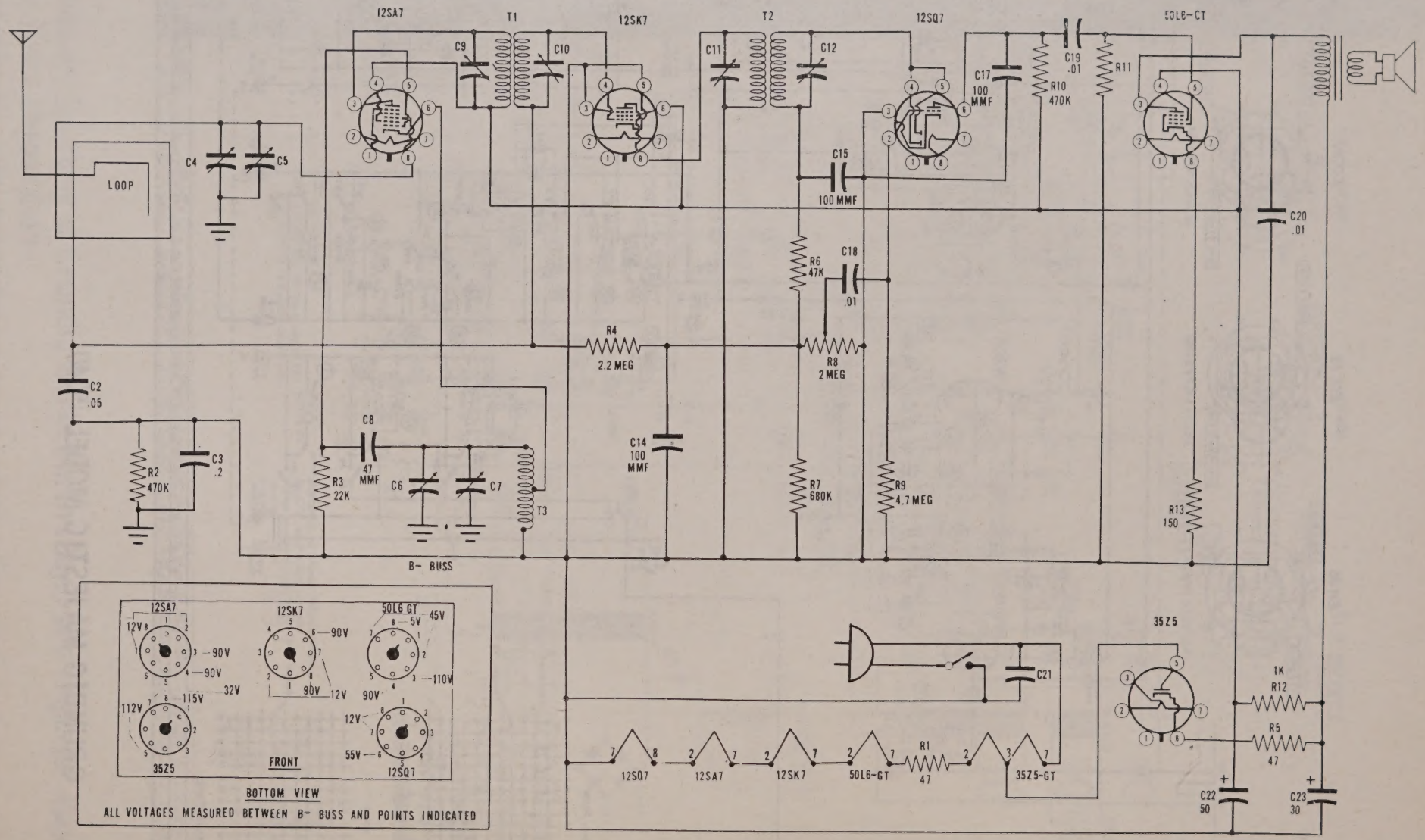
Grundig Majestic

Model 5040



GRUNDIG MAJESTIC MODEL 5040

Schematic Diagram Courtesy of Grundig Werke Furth (Bay.) and Importer Majestic International Sales Corporation



AIRLINE MODEL 15GHM-1552A

Schematic Diagram Courtesy of Montgomery Ward & Co.

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

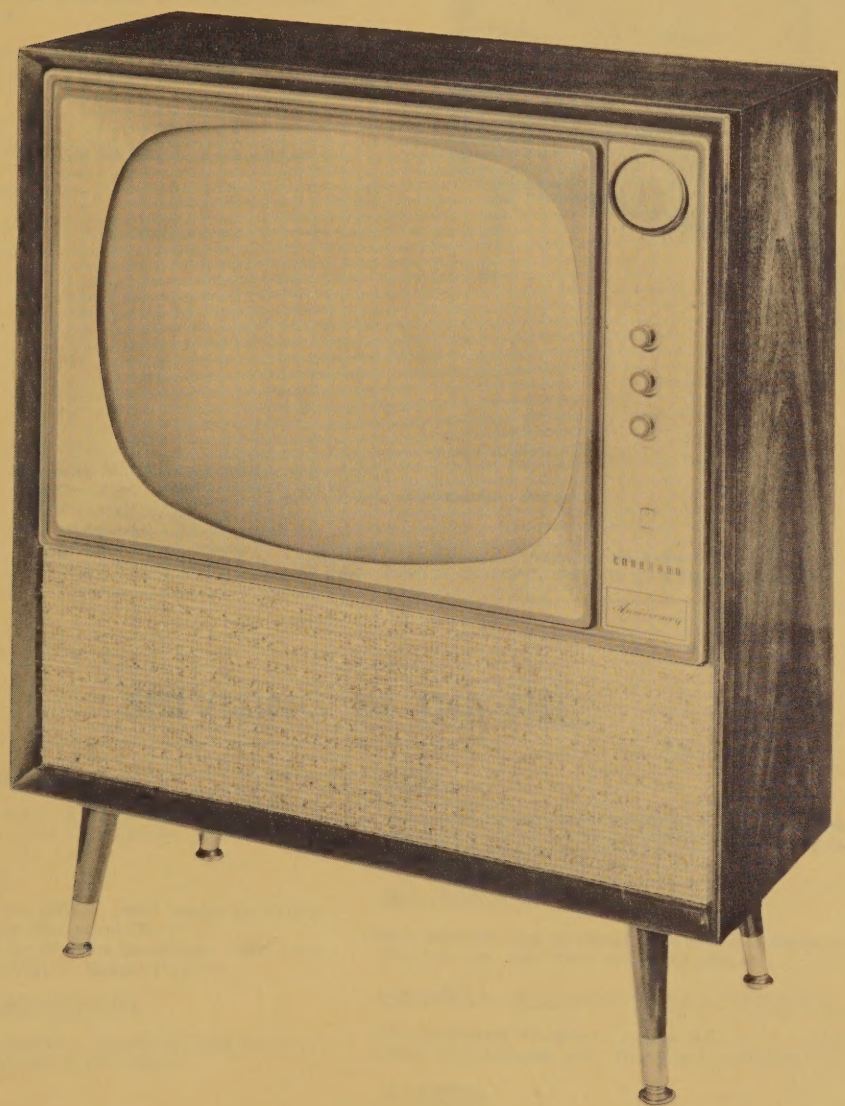
CORONADO MODELS
TV17-9535A, TV17-9536A

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

CORONADO MODELS
TV17-9535A, TV17-9536A



CORONADO MODELS
TV17-9535A, TV17-9536A

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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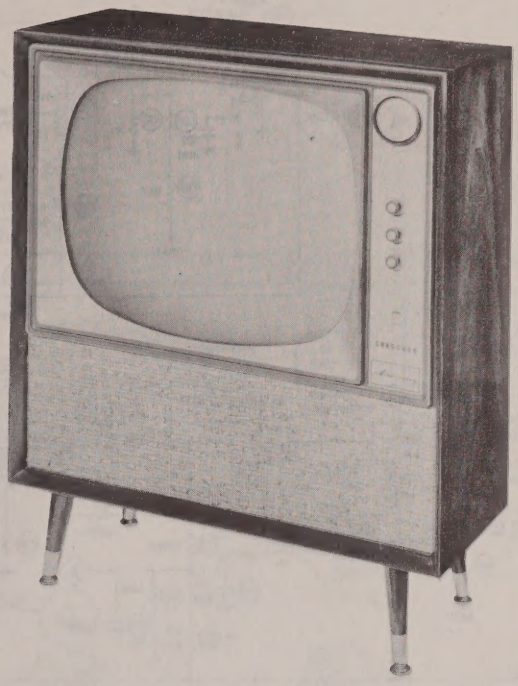
CORONADO MODELS TV17-9535A, TV17-9536A

CORONADO MODELS TV17-9535A, TV17-9536A

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 11 wood screws holding rear cover. Remove antenna connections. Remove rear cover.
2. Remove 6 push-on type knobs from the front.
3. Remove speaker leads, yoke plug, picture tube socket, and Hi-Voltage lead.
4. Remove 4 metal screws holding front control panel. Remove front control panel from the cabinet.
5. Remove pilot light.
6. Remove 6 chassis bolts from the bottom of the cabinet.
7. Remove the chassis.



CORONADO MODELS TV17-9535A, TV17-9536A

TRADE NAME	Coronado Models TV17-9535A, TV17-9536A
SUPPLIER	Gamble-Skogmo, Inc., 15 North 8th Street, Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	VHF-Seventeen, UHF-Eighteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 195 Watts, 1.9 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

For picture tube, and safety glass cleaning, it is necessary to remove the chassis. (See "Disassembly Instructions".)

FUSE

One fuse is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)
One fuse wire is used for filament protection. (For location, see M3 in photo "Chassis Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove the plug button located on the upper right side of the cabinet.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Cabinet-Rear View".)

SYNC STABILITY

Sync stability may be varied by means of a Range control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JA417R

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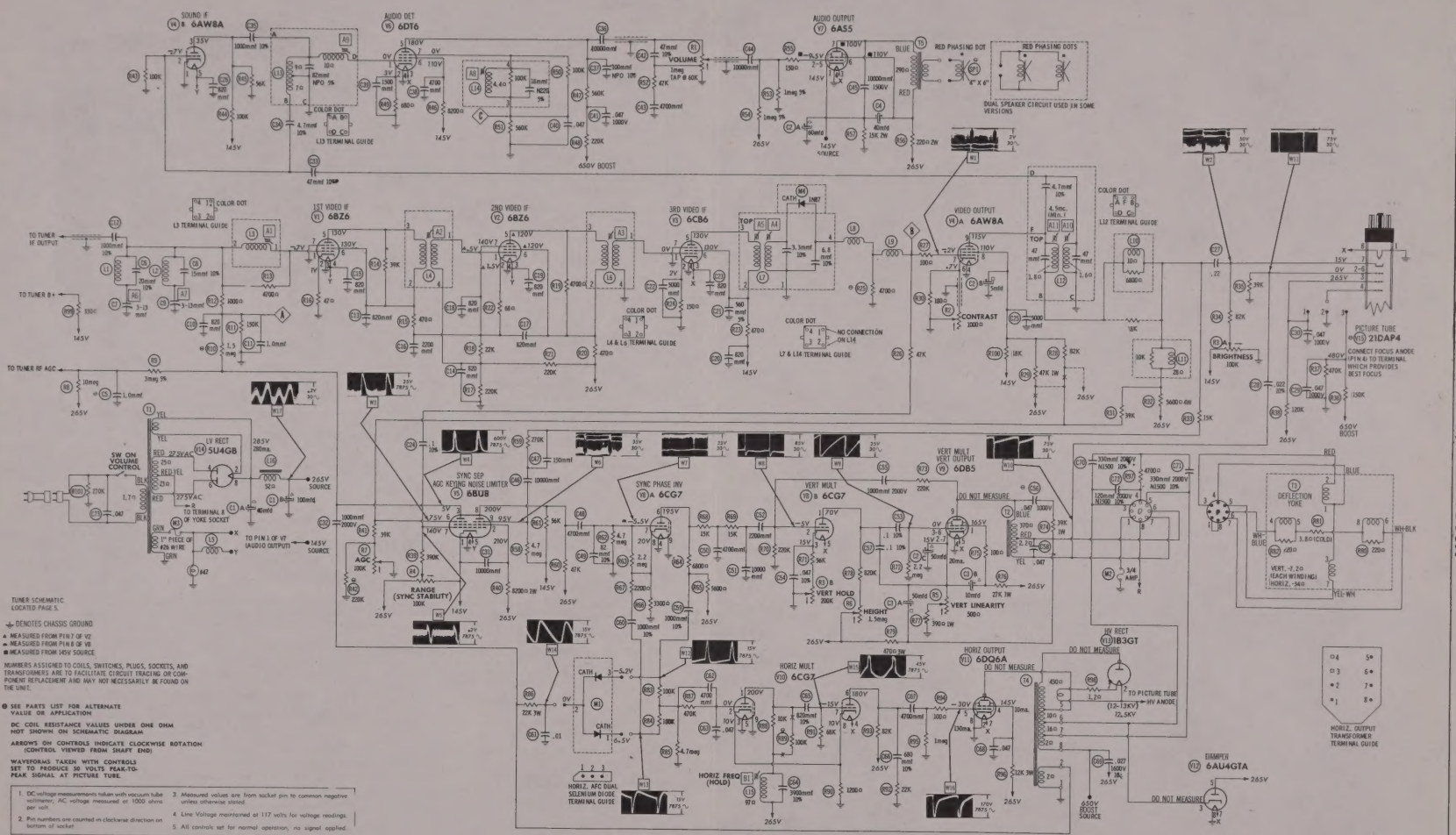
SOUND IF V4 B 6AW8A
AUDIO DET V5 6DT6
AUDIO OUTPUT V7 6AS5
VOLUME 1meg TAP @ 60K
RED PHASING DOT
RED PHASING DOTS
DUAL SPEAKER CIRCUIT USED IN SOME VERSIONS
650V BOOST
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6CB6
VIDEO OUTPUT V4 A 6AW8A
CONTRAST 1000
BRIGHTNESS 100K
PICTURE TUBE V15 21DAP4
CONNECT FOCUS ANODE (PIN 4) TO TERMINAL WHICH PROVIDES BEST FOCUS
DEFLECTION YOKE
SW ON VOLUME CONTROL
LV RECT V14 5U4GB
SYNC SEP AGC KEYING NOISE LIMITER V5 B 6BU8
SYNC PHASE INV V8 A 6CG7
VERT MULT V10 B 6CG7
VERT MULT VERT OUTPUT V9 6DB5
VERT HOLD 200K
HEIGHT 1.5meg
VERT LINEARITY 500Ω
RANGE (SYNC STABILITY) 100K
AGC 100K
HORIZ MULT V10 A 6CG7
HORIZ OUTPUT V11 6DQ6A
HV RECT V13 1B3GT
HORIZ FREQ (HOLD) 1meg
HORIZ. AFC DUAL SELENIUM DIODE TERMINAL GUIDE
DAMPER V12 6AU4GTA
HORIZ. OUTPUT TRANSFORMER TERMINAL GUIDE
TO PICTURE TUBE HV ANODE
(12-13kV) T2, 5kV
DO NOT MEASURE
TO TUNER IF OUTPUT
TO TUNER B+
TO TUNER RF AGC
TO PIN 1 OF V7 (AUDIO OUTPUT)
145V SOURCE
265V SOURCE
L3 TERMINAL GUIDE
L4 & L6 TERMINAL GUIDE
L7 & L14 TERMINAL GUIDE
L12 TERMINAL GUIDE
COLOR DOT
NO CONNECTION ON L14
TUNER SCHEMATIC LOCATED PAGE 5.
DENOTES CHASSIS GROUND
MEASURED FROM PIN 7 OF V2
MEASURED FROM PIN 8 OF V8
MEASURED FROM 145V SOURCE
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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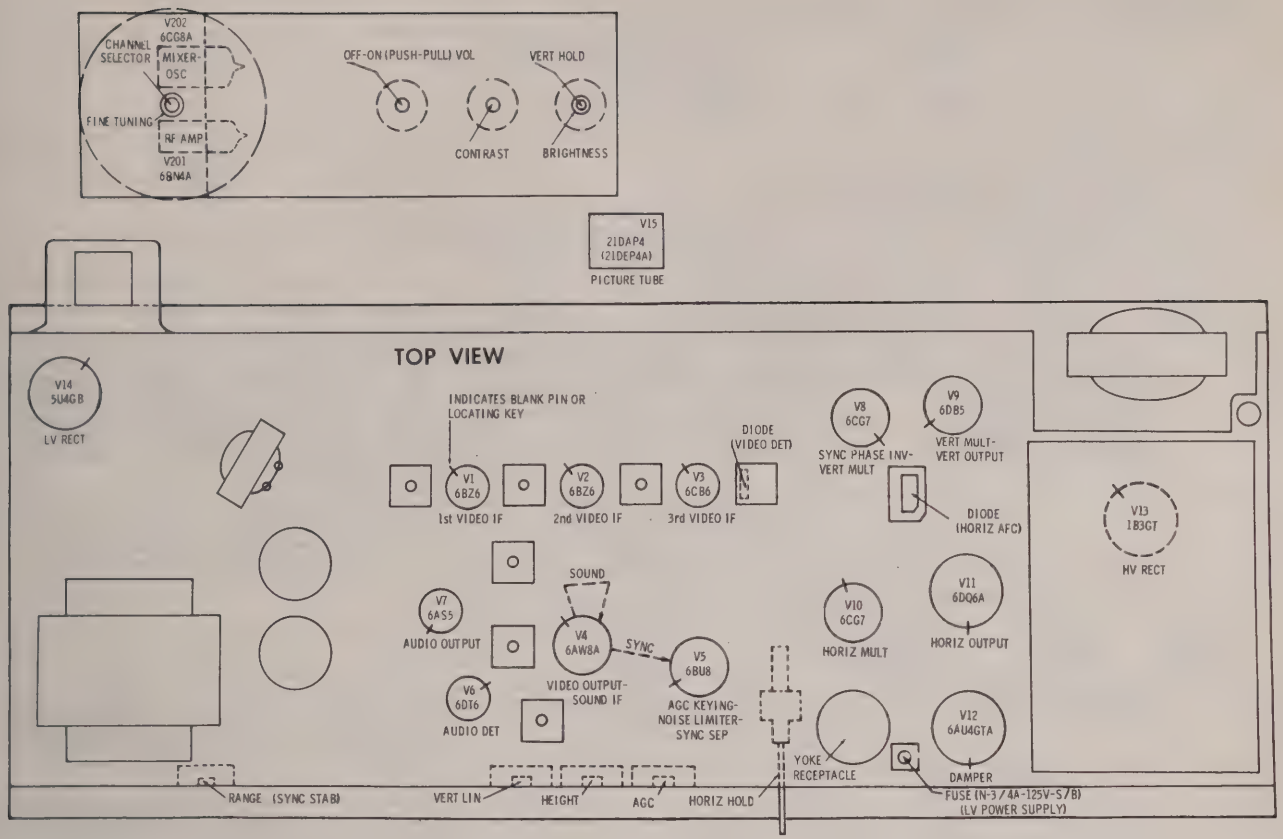
CORONADO MODELS
TV17-9535A, TV17-9536A

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (B+), V14, Fuse Wire (Fil.)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14, V15, Diode (Horiz. AFC)
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V14, V10, V11, V12
Vert. off freq. V8, V9
Horiz. off freq. V10, Diode (Horiz. AFC)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8, Diode (Horiz. AFC), V10
No vert. or horiz. sync V5, V8

CORONADO MODELS
TV17-9535A, TV17-9536A

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A5, A8 thru A11...GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A6, A7 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
Mixer Plate Coil .....GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VIDEO IF ALIGNMENT

Set Contrast fully clockwise and AGC fully counterclockwise.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.0MC (10MC Swp)	41.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point (B). Low side to chassis. (Across Video Det. load)	A1, A2, A3, A4, A5, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust Mixer Plate Coil and A2 to place 45.75MC marker at 50% on curve, A1 and A3 to correct low frequency side of curve, A4 for MINIMUM dip and A5 for proper tilt.
2.	"	"	"	41.25MC 47.25MC	"	"	A6, A7	Adjust A6 to place 41.25MC marker in proper trap notch. Adjust A7 to place 47.25MC marker in other trap notch.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	.05mfd	High side to point (B). Low side to chassis.	4.5MC (15KC Swp)	Any non-interfering channel	Across voice coil. Connect DC probe of VTVM to point (C). Common to chassis.	A8	Use high signal input. Set Volume for audible level. Adjust A8 for maximum audio on scope. If two peaks occur, select the one giving the highest meter readings.
4.	"	"	"	"	"	A9, A10	Reduce the signal level to the point where the audio on the scope starts to break up. Adjust A9 and A10 for cleanest maximum audio output on scope. Reduce the signal level still farther retouch A9 and A10 for cleanest maximum audio on scope.

SOUND IF ALIGNMENT USING AIR SIGNAL AND VTVM

Set the Contrast fully clockwise and tune in an air signal.
Connect the positive lead of the VTVM to point (C); negative lead to chassis.
Preset A8 fully counterclockwise. Next turn A8 clockwise until a peak is obtained on the meter. The point of maximum undistorted sound as judged by listening, will occur slightly past this peak and will be between 2.5 and 3.5 volts on the meter. Tune A8 for maximum undistorted sound and not peak voltage. Reduce the signal by disconnecting the antenna or detuning the Fine Tuning until the sound is distorted. Adjust A9 and A10 for maximum undistorted sound. Further reduce the sound and retouch A9 and A10. Continue reducing the signal and retouching A9 and A10 until optimum results are obtained. It may be necessary in some cases to retouch A8 for MINIMUM buzz at strong signal levels and A10 for cleanest sound at weak signal levels.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.05mfd	High side to point (B). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru diode det. (Fig. 2) to pin 7 (cathode) of picture tube. Common to chassis.	All	Adjust for MINIMUM deflection.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

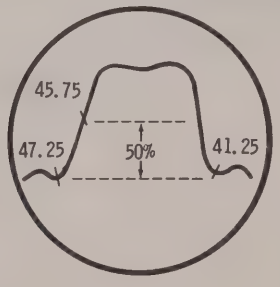


FIG.1

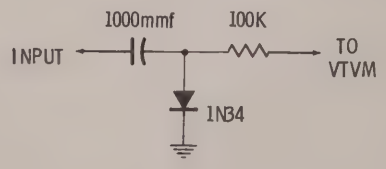
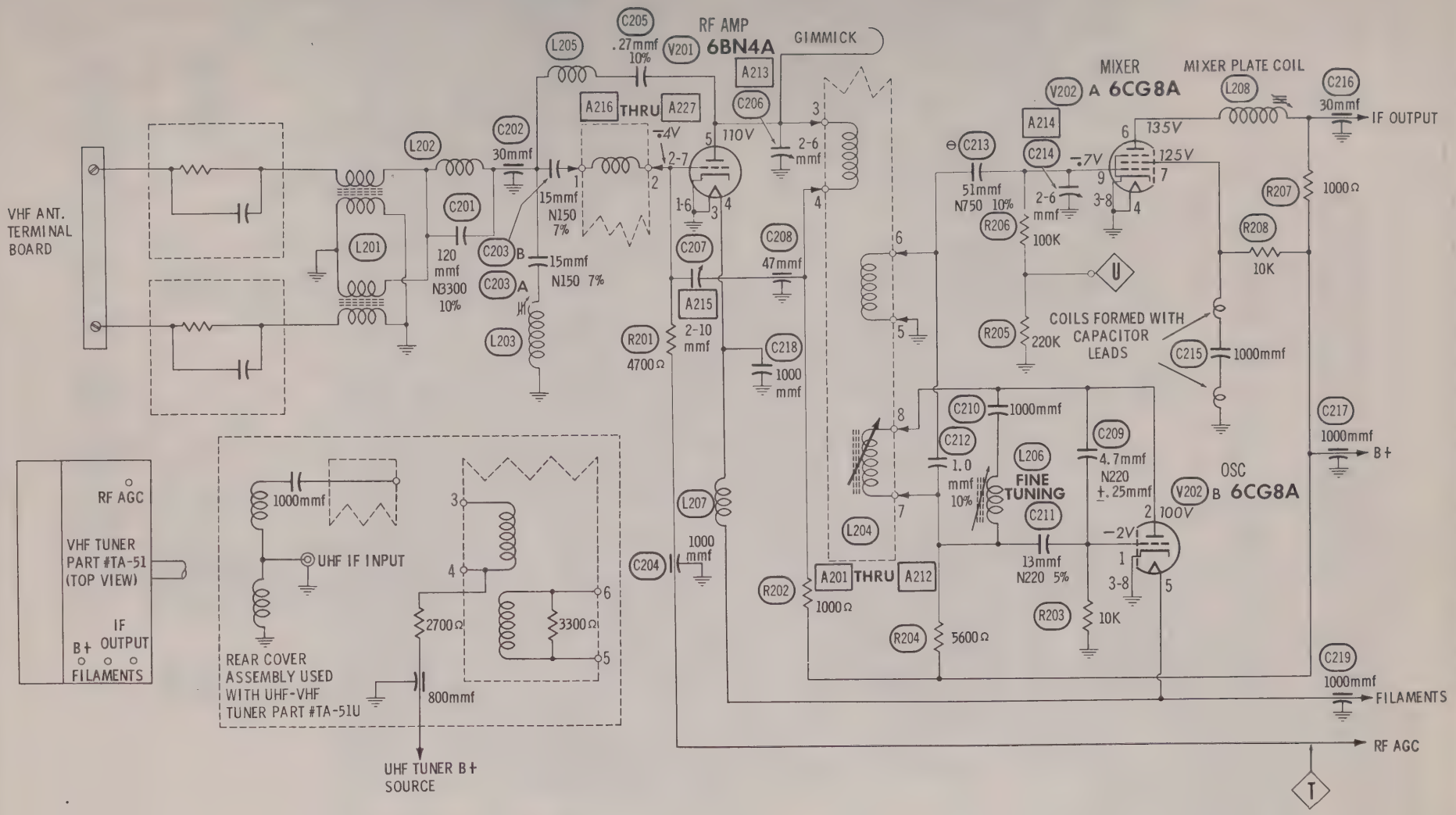


FIG.2



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TUNER TA-51, U

CORONADO MODELS TV17-953A, TV17-953BA

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

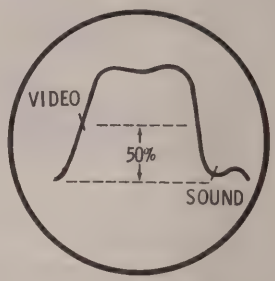


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point Ⓣ. Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point Ⓤ. Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Restore bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

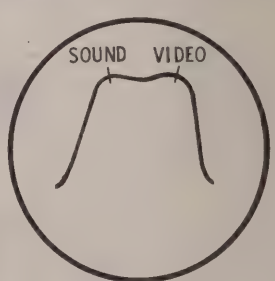
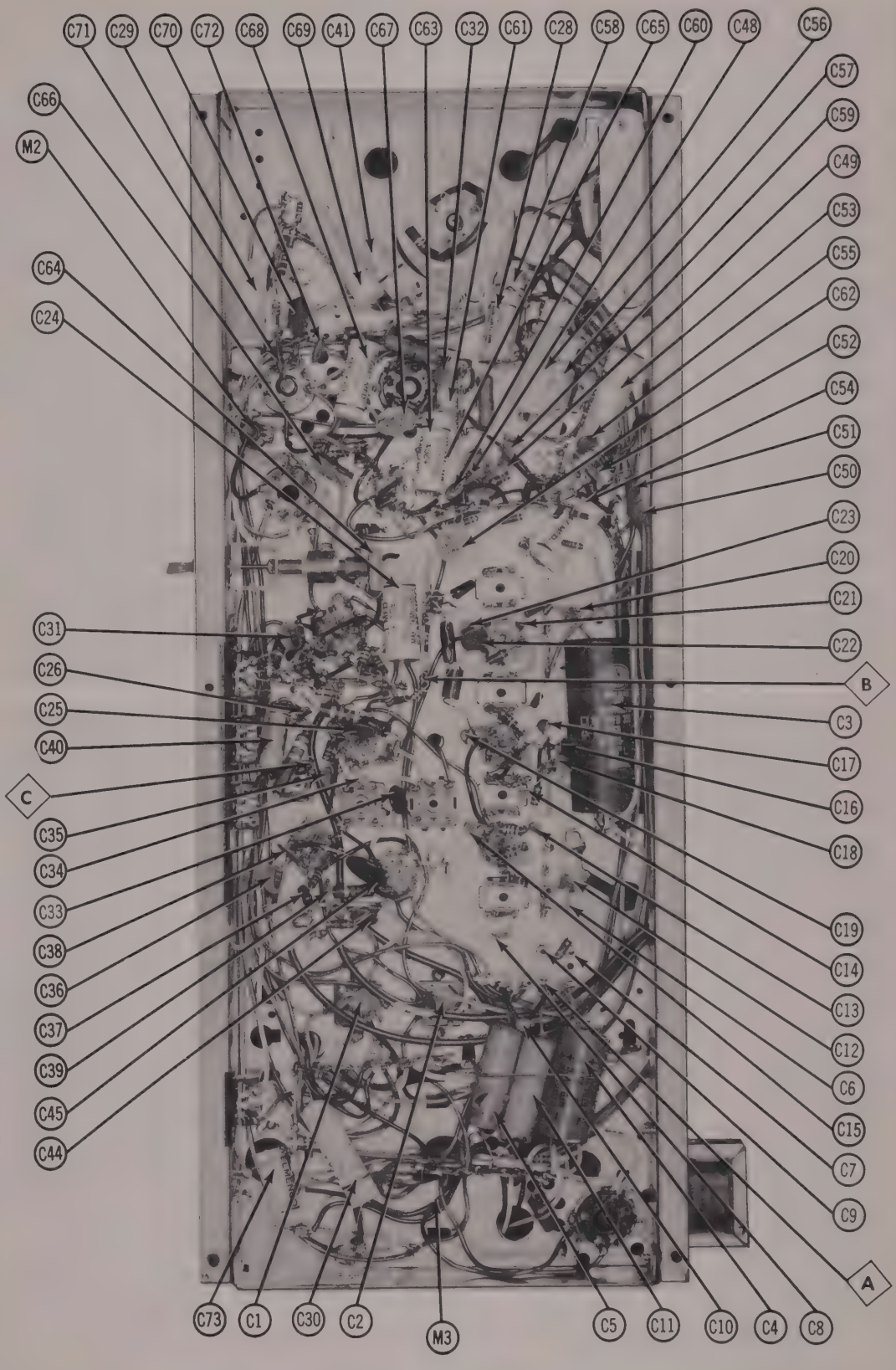
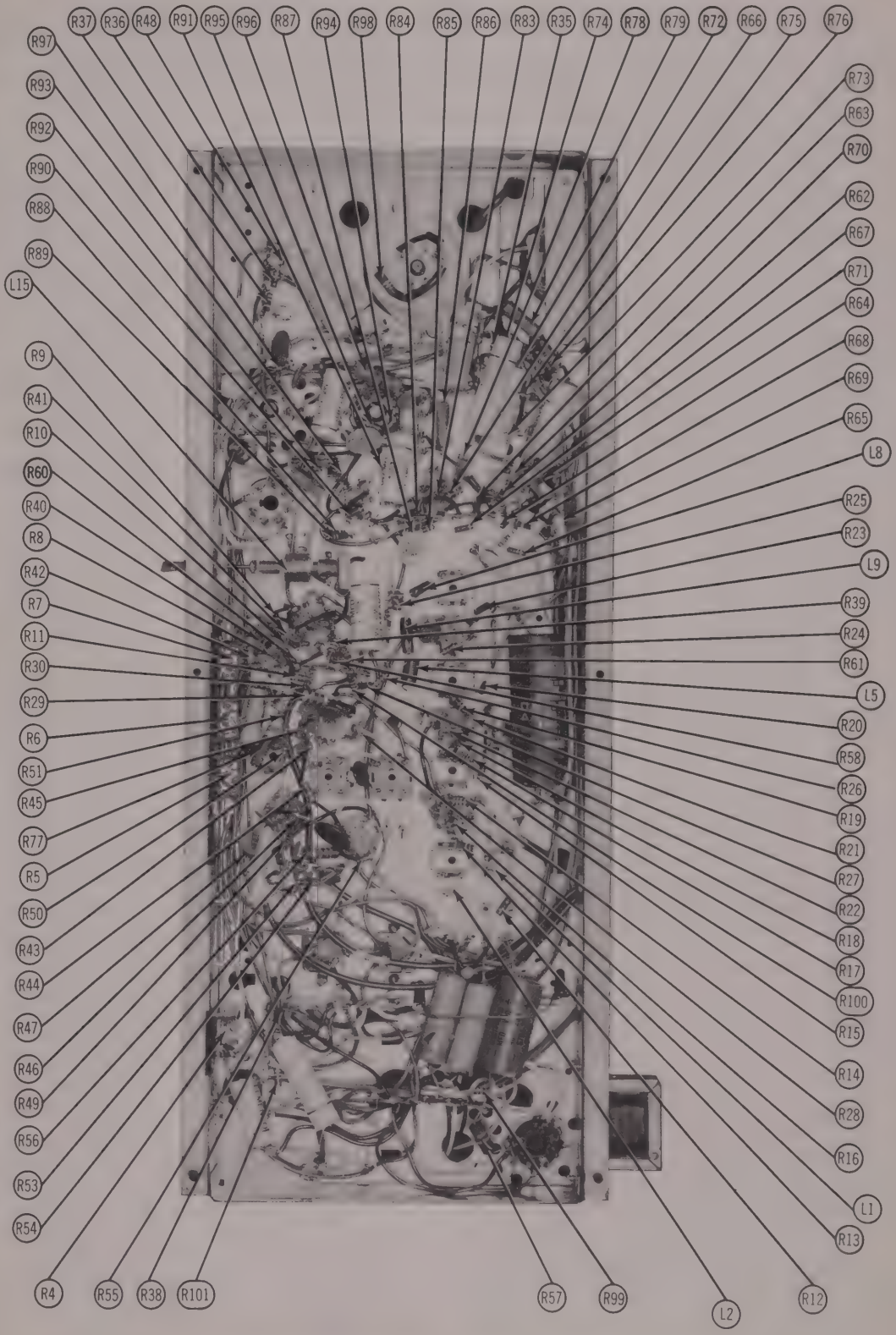


FIG. 202



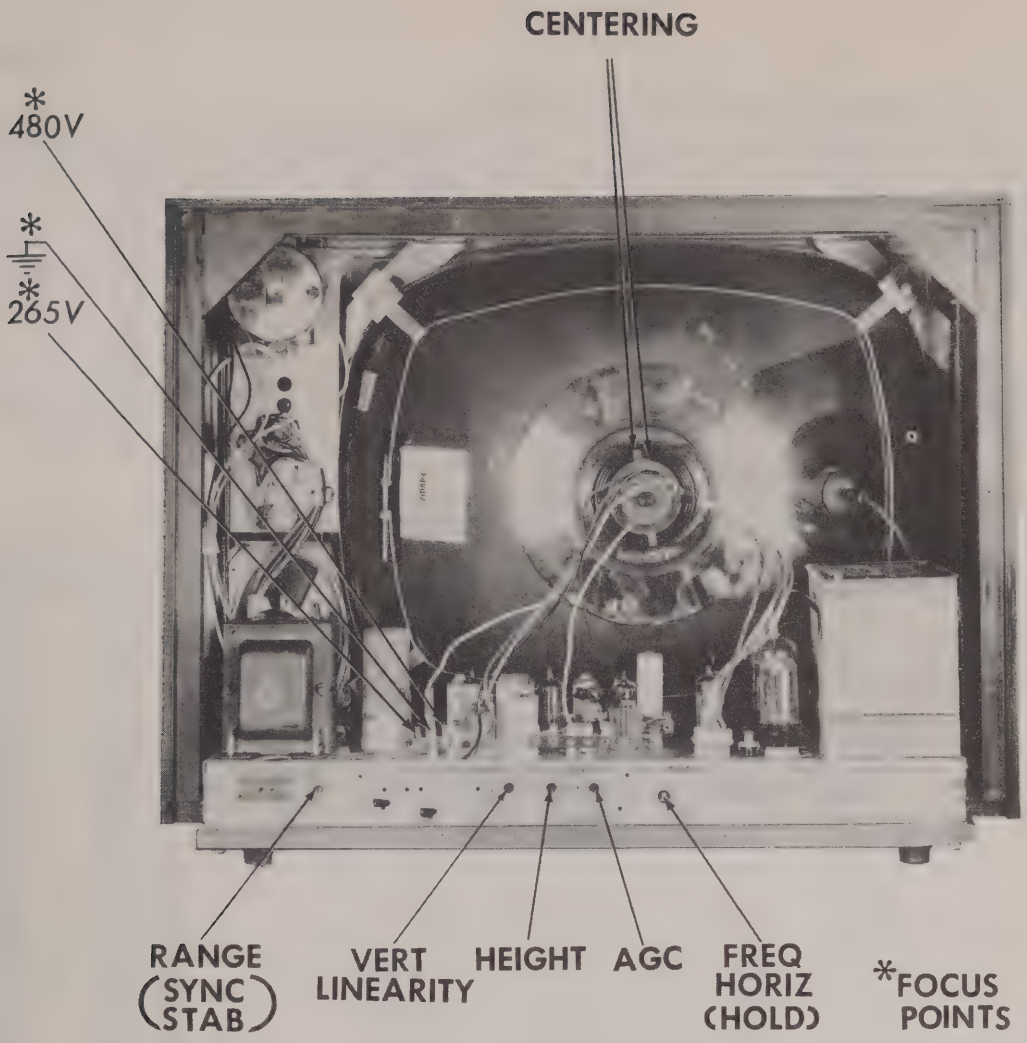
CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

CORONADO MODELS
TV17-953SA, TV17-953SA



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

TV17-9535A, TV17-9536A



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Frequency Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Frequency Hold slowly counterclockwise until the picture just falls into sync.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video-IF Amp	6BZ8	
V2	2nd Video-IF Amp	6BZ8	
V3	3rd Video-IF Amp	6CB6	
V4	Video-Output-Sound IF Amp	6AW8A	
V5	AGC-Keying-Noise Limiter-Sync Sep	6BU8	
V6	Audio Det	6DT6	
V7	Audio Output	6AB5	
V8	Sync Phase Inv -Vert. Multi	6CG7	
V9	Vert. Mult. -Vert. Output	6DB5	
V10	Horiz. Mult	6CG7	
V11	Horiz. Output	6DQ6A	
V12	Damper	6AL4GTA	
V13	HV Rect	1B3-GT	
V14	LV Rect	5U4GB	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	CORONADO PART No	GENERAL ELECTRIC PART No	RCA PART No	SYLVANIA PART No	
V15	21DAP4	21DEP4 ①	21DAP4 ①	21DAP4 ② 21DEP4 ① 21DEP4A ②	① Aluminized ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING		REPLACEMENT DATA						
	CAP.	VOLT	CORONADO PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	350	EC-115	AFH2-64-25	BO483	FP247	TMD-91	TVL-2780	
B	100	350							
C2A	80	350	EC-114	AFH4-66-10	D0676	FP419.11	TMQ-161	TVL-4709	
B	8	200							
C	150	50							
C3A	80	350	EC-116	AFH3-58-30	C0225	FP330.7	TMT-18	TVL-3639.5	
B	10	350							
C4	40	200	EC-113	PR3250V40	BR4035	TC56	TD-40-350	TVA-1511	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	CORONADO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	1.0	100		PC-89	P288N-1.0		CUB2W1	GEM-2E	ETM-M1	②
C6	33		10%	CC-134	NPO-SI 33	TCZ-3D	C10Q3C	ET-543	M8-42	
C7	3-12			TC-25						
C8	18		10%	CC-135	NPO-SI 15	TCZ-15	C10Q15C	CNO-425	M8-15	
C9	3-12			TC-25						
C10	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C11	1.0	100		PC-89	P288N-1.0		CUB2W1	GEM-2E	ETM-M1	
C12	1000		10%	CC-37	DE-1000		185D8	JL-2D	M8-21	
C13	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C14	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C15	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C16	2200			CC-122	BPD-0022	DD-822	BYA10D22	B-222	5HK-D22	
C17	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C18	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C19	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C20	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C21	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C22	560		5%	CC-126			183T56		M8-356	
C23	5000			CC-3	BPD-005	DD-802	BYA10D5	B-350	5HK-D5	
C24	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C25	.1	600	10%	PC-78C	V84CSP1		PM6P1	GTM-601	6TM-P1	
C26	5000			CC-3	BPD-005	DD-802	BYA10D5	B-350	5HK-D5	
C27	330			CC-96	BPD-0006	DD-8S1	L10T82	B-382	5GA-T82	
C28	.22	400		PC-28C	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C29	.022	900	10%	PC-45C	V84CS822		PM5S22	GTM-5122	6TM-S22	
C30	.047	1000		PC-86C	P1088N-047		CUB1G847	GEM-10147	10TM-S47	
C31	.047	1000		PC-86C	P1088N-047		CUB1G847	GEM-10147	10TM-S47	
C32	10000			CC-81	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C33	1000	3000		CC-121	BYD-3D-1000	D3D0-103	BYB30D1	ZHV-3D	30GA-D1	
C34	47		10%	CC-12	DE-47	DD-470	C10Q47C	CNO-647	M8-447	
C35	4.7		10%	CC-15	NPO-SI 4.7	TCZ-4R7	C10V47C	ET-5547	M8-55	
C36	1000		10%	CC-37	DE-1000		185D8	JL-2D	M8-21	
C38	10000			CC-81	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C37	100		NPO 10%	CC-73	NPO-SI 100	TCZ-100	C10Y1C	ZT-531	STCC-T1S 10% *	
C39	4700			CC-99	BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C39	1500			CC-127	BPD-0015	DD-152	BYA10D15	B-315	5HK-D15	
C40	.047	300		PC-36C	P288N-047	DF-S03	CUB3S47	GEM-4147	3TM-S47	
C41	.047	1000		PC-86C	P1088N-047		CUB1G847	GEM-10147	10TM-S47	
C42	47		10%	CC-12	DE-47	DD-470	L10Q47	CNO-447	M8-447	
C43	4700			CC-99	BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C44	10000			CC-81	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C45	10000	1500		CC-121	DAC-37	DD-103	HVE16S1	ZHV-1D	20HKB-S1	
C46	10000			CC-81	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C48	10000			CC-123	DI-150	DD-151	L10Y15	B-315	5GA-T15	
C48	4700			CC-99	BPD-0047	DD-473	BYA10D47M	B-347	5HK-D47	
C49	82		10%	CC-120	DI-82	DD-820	C10Q82	CNO-482	M8-482	
C50	4700			CC-99	BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C51	10000			CC-81	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C52	2200			CC-122	BPD-0022	DD-822	BYA10D22	B-222	5HK-D22	
C53	.1	600	10%	PC-78C	V84CSP1		PM6P1	GTM-601	6TM-P1	
C54	.047	600	10%	PC-46C	V84CS847		PM6S47	GTM-6147	6TM-S47	
C55	1000	3000		PC-98	HVD-3D-1000	DD3D-102	HVB30D1	ZHV-3D	30GA-T1	
C56	.047	1000		PC-86C	P1088N-047		CUB1G847	GEM-10147	10TM-S47	③
C57	.1	600	10%	PC-78C	V84CSP1		PM6P1	GTM-601	6TM-P1	
C58	.047	600		PC-46C	P688N-047	DF-S03	CUB6S47	GEM-6147	6TM-S47	
C59	1000		10%	CC-37	DE-1000		185D8	JL-2D	M8-21	
C60	1000		10%	CC-37	DE-1000		185D8	JL-2D	M8-21	
C61	.01	600		PC-15C	P688N-01	DS-103	CUB6S1	GEM-611	6TM-S1	
C62	4700			CC-99	BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C63	.047	600		PC-46C	P688N-047	DF-S03	CUB6S47	GEM-6147	6TM-S47	
C64	3900		10%	MC-14	1484-0039		1R5D39	MCB463	M8-439	
C65	620		10%	MC-23	1489-00062		1R5T62	MCB251	M8-362	
C66	560		10%	MC-21	1485-00061	DS-681	1R5T68		M8-368	
C67	4700			CC-99	BPD-0047	DD-472	BYA10D47M	B-347	5HK-D47	
C68	.047	600		PC-46C	P688N-047	DF-S03	CUB6S47	GEM-6147	6TM-S47	
C69	.027	1600	10%	PC-84C						
C70	330	3000	N1500 10%	CC-119						
C71	330	3000	N1500 10%	CC-119						
C72	120	3000	N1500 10%	CC-118						
C73	.047	600		PC-46C	P688N-047	DF-S03	CUB6S47	GEM-6147	6TM-S47	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Some versions may use .22mfd @ 200V in this application (Part #PC-25C).
② Some versions may use 1000mmf @ 2000V in this application (Part #CC-98).

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No	
R1A	1meg	½	VC-173				PP6A	Volume, Tap @ 80K
B	Switch					Q17-108	Not Req	Push-Pull Off-On
R2A	1000Ω	½	VC-178	B-505	A47-1000-S	Q17-108	U8	Contrast
B	Shaft			Not Req.	F8-3	Not Req.	Not Req.	
R3A	100K	½	VC-174	F1-31		● CU-1113	● CU#6047	Brightness
B	200K	½		R2-33				Vert. Hold
R4A	100K	½	VC-177	AB-40	B47-100K-S	Bil-136	PTA3SL	Range (Sync Stability)
B	Shaft			AK-19	Not Req.	TM-1	Not Req.	
R5A	500Ω	½	VC-176	AB-4	B47-500-S	Bil-103	PTA52L	Vert. Lin.
B	Shaft			AK-19	Not Req.	TM-1	Not Req.	
R6A	1.5meg	½	VC-175	AB-743	B47-1.5meg-S	Bil-138	TA15SL	Height
B	Shaft			AK-19	Not Req.	TM-1	Not Req.	
R7A	100K	½	VC-177	AB-40	B47-100K-S	Bil-136	PTA3SL	AGC
B	Shaft			AK-19	Not Req.	TM-1	Not Req.	

● "Concentrikit" Equivalent: K-2 Kit with Base Elements & Shafts: Bil-128, PI-304 (Panel) Bil-129, RI-290 (Rear)

▲ "STA-LOC" Equivalent: FA15L, RU25L, OF325, 1K2625

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No.	RATING		CORONADO PART No	NOTES
	OHMS	WATT		
R8	10meg		IR-151	
R9	2meg 5%		IR-279	Note 1
R10	1 5meg			
R11	150K		IR-95	
R12	1000Ω		IR-112	
R13	4700Ω		IR-48	
R14	39K		IR-121	
R15	470Ω		IR-8	
R16	47Ω		IR-97	
R17	220K		IR-91	
R18	22K		IR-45	
R19	4700Ω		IR-48	
R20	470Ω		IR-8	
R21	330K		IR-81	
R22	68Ω		IR-59	
R23	470Ω		IR-8	
R24	150Ω		IR-98	Note 2
R25	4700Ω		IR-48	
R26	47K		IR-46	
R27	100Ω		IR-104	
R28	82K		IR-31	
R29	47K	1	IR-120	
R30	180Ω		IR-133	
R31	39K		IR-121	
R32	1600Ω	4	IR-273	
R33	15K		IR-63	
R34	82K		IR-31	
R35	39K		IR-121	
R36	150K		IR-96	
R37	470K		IR-110	
R38	180K		IR-144	
R39	390K		IR-117	
R40	3200Ω	1	IR-255	
R41	39K		IR-121	
R42	220K		IR-91	Note 3
R43	100K		IR-43	
R44	100K		IR-43	
R45	56K		IR-100	
R46	5200Ω		IR-80	
R47	560K		IR-136	
R48	220K		IR-91	
R49	680Ω		IR-135	
R50	100K		IR-43	
R51	560K		IR-138	
R52	47K		IR-46	
R53	1meg 5%		IR-74	
R54	1meg 5%		IR-74	

Note 1. Some versions may use 2.2meg in this application (Part #IR-163).
Note 2. Some versions may use 6800Ω in this application (Part #IR-78).
Note 3. Some versions may use 56K in this application (Part #IR-100).
Note 4. Not used in some versions.

ITEM No.	RATING		CORONADO PART No.	NOTES
	OHMS	WATT		
R55	150Ω		IR-98	
R56	220Ω	2	IR-272	
R57	15K	2	IR-68	
R58	4.7meg		IR-277	
R59	270K		IR-140	
R60	47K		IR-46	
R61	56K		IR-100	
R62	4.7meg		IR-277	
R63	2.2meg		IR-163	
R64	6800Ω		IR-78	
R65	5600Ω		IR-52	
R66	3300Ω		IR-108	
R67	22000Ω		IR-47	
R68	15K		IR-63	
R69	15K		IR-63	
R70	220K		IR-91	
R71	56K		IR-100	
R72	2.2meg		IR-163	
R73	220K		IR-91	
R74	39K	1	IR-77	
R75	100Ω		IR-104	
R76	27K	1	IR-148	
R77	3900Ω	1	IR-55	
R78	820K		IR-116	
R79	470Ω	3	IR-271	
R80	220Ω		IR-8	
R81	5.8Ω Cold		IR-284	
R82	220Ω		IR-8	
R83	100K		IR-43	
R84	100K		IR-43	
R85	4.7meg		IR-277	
R86	22K	3	IR-276	
R87	470K		IR-110	
R88	10K		IR-94	
R89	100K		IR-43	Note 4
R90	1200Ω		IR-84	
R91	68K		IR-61	
R92	22K		IR-45	
R93	68K		IR-31	
R94	100Ω		IR-104	
R95	1meg		IR-105	
R96	22K	3	IR-276	
R97	4700Ω		IR-48	
R98	1.2Ω		IR-274	
R99	330Ω		IR-189	
R100	18K		IR-99	
R101	270K		IR-140	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		CORONADO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No	Ram PART No	
L1	41.25MC Trap Coil	L-161-1						
L2	47.25MC Trap Coil	L-161						
L3	1st Video IF	L-150				6231 †		
L4	2nd Video IF	L-151	17-5004	17-5004	TV-126	6234		
L5	FL. Choke	L-164	19-1001	19-1001	BC-562	4604		1.6uh
L6	3rd Video IF	L-151	17-5004	17-5004	TV-126	6234		
L7	4th Video IF	L-152						10.4uh
L8	RF Choke	L-160	19-1005	19-1005	BC-586	4812		27.5uh
L9	RF Choke	L-158						
L10	Series Peaking Coil	L-162						
L11	Shunt Peaking Coil	L-163						
L12	1st Sound IF	L-154						
L13	2nd Sound IF	L-155						③
L14	Quadrature Coil	L-110A	17-1031 *	17-1031 *		1481 *	SD-5*	

* Parallel with 100K resistor. ① Wound on 6800Ω resistor. ② Wound on 10K resistor. ③ Pri. tapped @ 7Ω.
† Disregard secondary.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CORONADO PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L15	97Ω		L-156	HS-5 *	TV-163 *	6210 *	H-102 *	HS-5	Horiz. Osc. * Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 (%)	CORONADO PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No.	Thordarson PART No	Triad PART No
L16	280A	52Ω	1Hy.	FC-18	26C44	C-2996	F-501	C-2328	26C44	C-27X

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
T1	117V @ 1.9A	550VCT @ .280A	5V ② 3A	TR-52A						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 9.2A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
T2	Vert. Output	TR-50A	26B14		V31P		26B14	A-113X ①
T3	Yoke-Horiz. (18.5MH) (210°)-Vert.(13.8MH)	L-149	Y-48 ② ①		Y-110 ② ①	DY-27A ② ①	Y-48 ② ①	Y-80 ② NW-33 ② YC-110 ②
	Rear Cover & Centering Device	MP-136						
	Yoke Clamp	ST-58						
T4	Horiz Output	TR-51	FLY-137 *		X-162 *	EFR-172*	HO-304 *	FLY-137 *	D-151R*

① Connect as autoformer.
② Use original yoke damping networks. Require new rear cover, centering device, and yoke clamping device.
③ Connect same as original.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5	5		5	5	5	5	5 & 4
6	6		6	4	6	6	6
7	7		7	3	7	7	7
8	8		8	1	9	8	8
2	1		1	7	2	1	2
1	2		2	6	1	2	1
Special Notes	④		③	⑤		④	

④ If AGC does not function properly, reverse connections to terminals #1 and #2.
⑤ Filament requires one turn only.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CORONADO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
T5	4700Ω	3-4Ω	AT-50	24S48	A-3036	AU-801	A-3877	24S48	S-6X

SPEAKER

ITEM No.	TYPE				REPLACEMENT DATA		NOTES
	SIZE	FIELD	V C	IMP	CORONADO PART No.	QUAM PART No.	
SP1	5"	PM		3-4Ω	SPK-36	5A07	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	CORONADO PART No.	FEDERAL PART No.	INTERNATIONAL RECT. PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1		SR-15 ①	K1615 ①	SD-91 ②			① Selenium Type. ② Silicon Type (2 used)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						NOTES
			CORONADO PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M2	N	3/4A 125V	F-13		F-14	333, 750 (N-3/4A-125V)	3AG10	N 3/4	HN 1/2 to 3/4
M3	1" #28 Wire								

CORONADO MODELS TV17-9335A, TV17-9336A

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CORONADO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4	1N87	SC-23	1N60	1N60	1N60	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M5	Tuner	TA-51	VHF
	Tuner	TA-51U	VHF-UHF Provisions

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	DW-96	
Mask	MP-135	
Knob	K-336	Channel Selector
Knob	K-337	Fine Tuning
Knob	K-340	Off-On-Volume, Contrast
Knob	K-338	Brightness
Knob	K-339	Vert. Hold
Cabinet	CA-333M	Mahogany
Cabinet	CA-333B	Blond
Cabinet Back	CB-200	
Legs	CH-100M	Mahogany
Legs	CH-100B	Blond
Control Panel	CP-94	
Dial Panel	CP-95	Calibrated

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor

TUNER PARTS LIST AND DESCRIPTIONS

TA-51,U

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BN4A	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CG8A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		N3300 10%	13L-031						
C202	30			13M350U300N-02						
C203A	15		N150 7%	13L8PG150N2						
B	15		N150 7%							
C204	1000			13M350EA102Z-01	EF-001	MFT-1000			503C-D1	
C205	.27		10%	13D-111-45						
C206	2-6			31B-902-01		829-6		CT552		
C207	2-10			31B-902-09		829-10				
C208	47			13M320U470J-09	EF-00005	MFT-50				
C209	4.7		N220 ±.25mmf	13L8R4R7C						
C210	1000			13LX102Z	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C211	13		N220 5%	13L8R130J						
C212	1.0		10%	13D-111-35	NPO-SI 1.0	TCZ-1		CNO-510	5TCCB-V1S 10% *	
C213	51		N750 10%			TCN-51	C10Q51U		5TCU-Q51S 10% *	①
C214	2-6			31B-902-01		829-6		CT552		
C215	1000			31J-024	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C216	30			13M350U300N-02						
C217	1000			13M350EA102Z-01	EF-001	MFT-1000			503C-D1	
C218	1000			13LX102Z	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C219	1000			13M350EA102Z-01	EF-001	MFT-1000			503C-D1	

Note 1. Some versions may use 51mmf N470 10% in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
NOTE : Part numbers listed above are "Standard Coil" Part Numbers.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PART No.
	OHMS	WATT	
R201	4700Ω		12TAE472M-01-02-03
R202	1000Ω		12TAE102M-01-02-03
R203	10K		12TAE103M-01-02-03
R204	5600Ω		12TAE562K-01-02-03

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R205	220K		12TAE224M-01-02-03	
R206	100K		12TAE104M-01-02-03	
R207	1000Ω		12WAE102M-01	
R208	10K		12TAE103M-01	

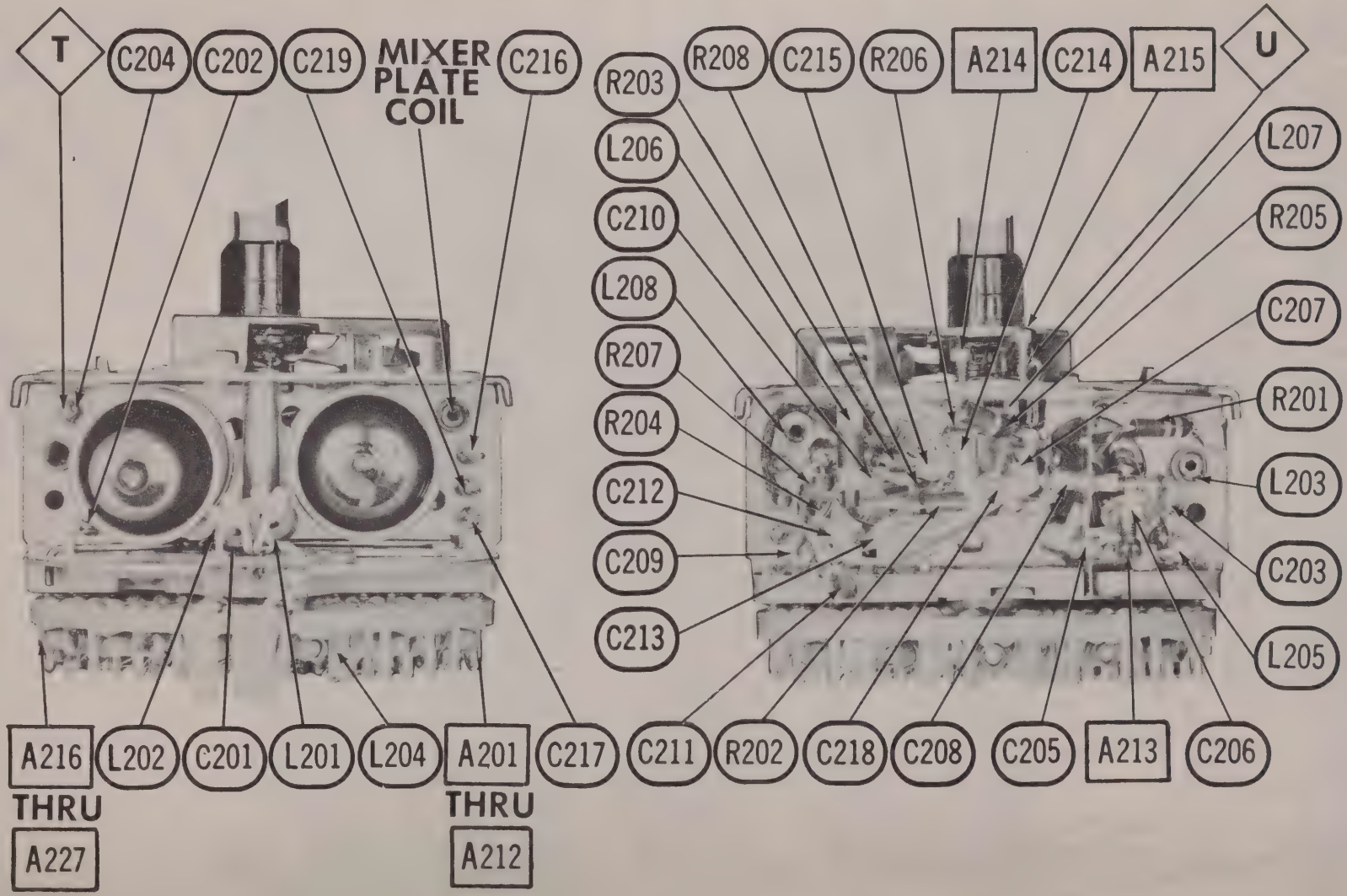
NOTE: Part numbers listed above are "Standard Coil" Part Numbers.

COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T3398-01	Includes L202, L203
L202	RF Choke	34A-748	
L203	IF Trap Coil	34A-762	
L204	Ant., RF, Mixer Grid & Osc. Coils	31T-3361-06	Includes Rotor Disc Assy.

ITEM No.	USE	PART No.	NOTES
L205	RF Choke	34A-1005	
L206	Fine Tuning Coil	34A-787-03	
L207	Fil. Choke	31K-137-027	
L208	Mixer Plate Coil	31UA-580-017	

NOTE: Part Numbers listed above are "Standard Coil" Part Numbers.


T
C204
C202
C219
MIXER PLATE COIL
C216
R208
C215
R206
A214
C214
A215
U
R203
L206
C210
L208
R207
R204
C212
C209
C213
L207
R205
C207
R201
L203
C203
L205
A216
L202
C201
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C218
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A213
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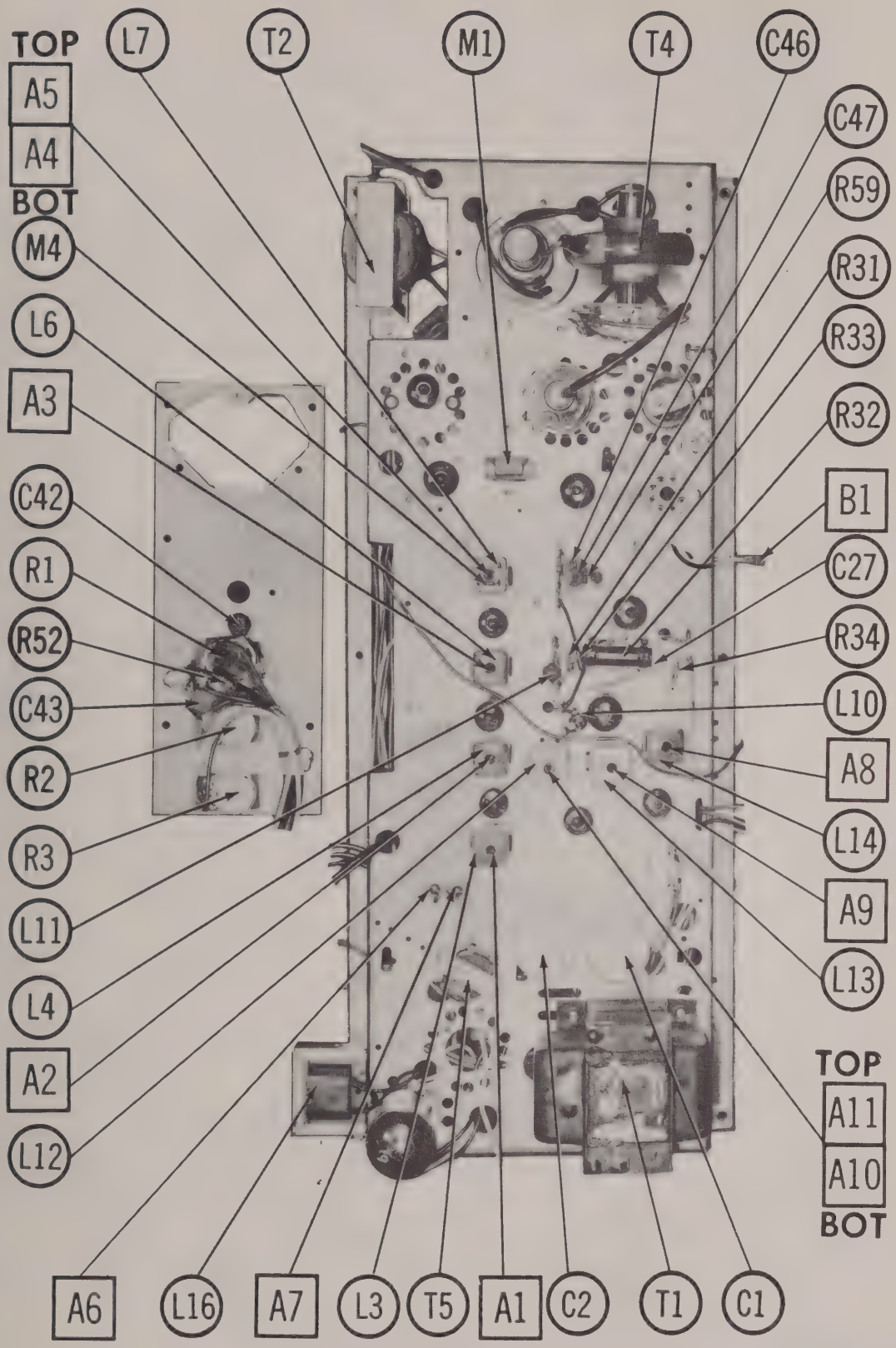
THRU
A227
THRU
A212



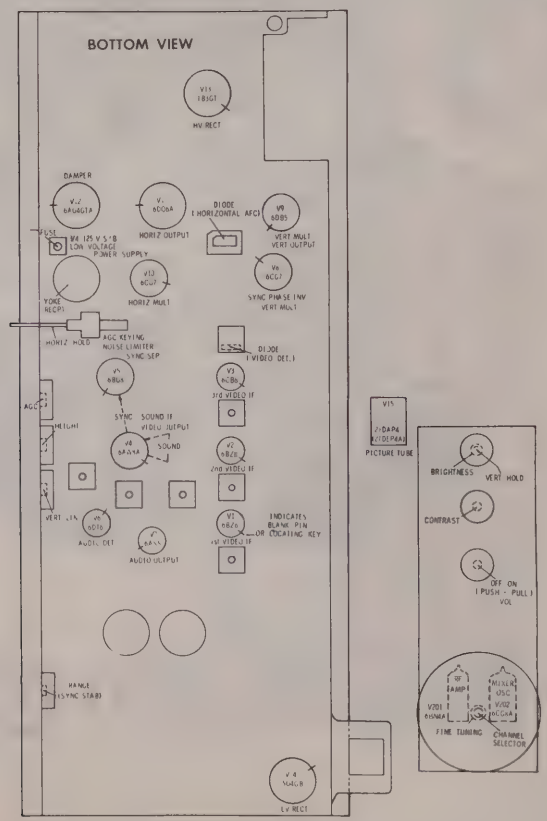
CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	47Ω	0Ω	.1Ω	▲ 470Ω	▲ 470Ω	0Ω		
V2	6BZ6	▲ 22K	▲ 68Ω	.1Ω	0Ω	†470Ω	†470Ω	160K		
V3	6CB6	.1Ω	150Ω	.1Ω	0Ω	■ 470Ω	■ 470Ω	0Ω		
V4	6AW8A	0Ω	100K	■45K	0Ω	.1Ω	● 50Ω	4800Ω	15K	†5600Ω
V5	6BU8	■ 0Ω	†8200Ω	1.5meg	0Ω	.1Ω	†25K	●†410K	†30K	■4.7meg
V6	6DT6	19Ω	680Ω	.1Ω	0Ω	†780K	■ 8200Ω	560K		
V7	6AS5	¶	550K	.1Ω	0Ω	550K	†220Ω	†510Ω		
V8	6CG7	● †1.5meg	220K	● 60K	0Ω	.1Ω	†12K	1.7meg	3300Ω	0Ω
V9	6DB5	†27K	● 500Ω	2.2meg	0Ω	.1Ω	2.2meg	●500Ω	NC	†840Ω
V10	6CG7	†10K	1meg	1200Ω	.1Ω	0Ω	†82K	68K	1200Ω	0Ω
V11	6DQ6A	NC	□Ω	NC	†12K	1meg	TP	.1Ω	0Ω	TOP CAP †10Ω
V12	6AU4GTA	NC	NC	¶700K	NC	†0Ω	NC	.1Ω	0Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †440Ω
V14	5U4GB	NC	¶	NC	25Ω	NC	23Ω	NC	¶	
V15	21DAP4	0Ω	39K	†120K	0Ω	NC	39K	●■ 100K	.1Ω	
V201	6BN4A	0Ω	3.5meg	0Ω	.1Ω	■ 1300Ω	0Ω	3.5meg		
V202	6CG8A	10K	■ 5900Ω	0Ω	0Ω	.1Ω	■ 1300Ω	■ 10K	0Ω	320K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
■ MEASURED FROM 145V SOURCE.
† MEASURED FROM 265V SOURCE.
‡ MEASURED FROM PIN 3 OF V12.
▲ MEASURED FROM PIN 7 OF V2.

NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

PHOTOFACT* Folder with CIRCUITRACE*

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

FLEETWOOD MODELS
870, 900

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

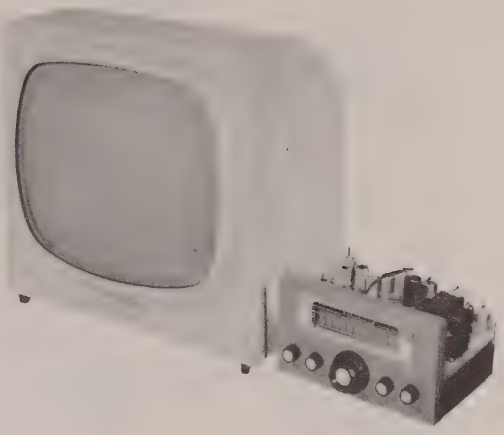
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PHOTOFACT* Folder with CIRCUITRACE*

DISASSEMBLY INSTRUCTIONS

SWEEP CHASSIS REMOVAL

1. Remove 4 wood screws holding rear cover. Remove the rear cover.
2. Remove yoke plug, HV lead, picture tube socket, 2 cables from the audio chassis and the ground lead from the picture tube mounting bracket on the right side of cabinet.
3. Remove 8 screws (4 on each side) along bottom of sides of the cabinet.
4. Remove the chassis.
5. Remove 4 screws holding plastic feet. Remove bottom cover.
6. Remove 3 screws at top left rear of cabinet holding audio chassis. Remove audio chassis.



FLEETWOOD MODELS
870, 900

TRADE NAME	Fleetwood Models 870, 900
MANUFACTURER	Conrac, Inc., Glendora, California
TYPE SET	Television Receiver
TUBES	Twenty-six
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING RF Chassis 870 .. 57 Watts, .61 Amp. @ 117 Volts AC Sweep Chassis 900..165 Watts, 1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

The safety glass is laminated to the front surface of the picture tube and cannot be removed for cleaning.

FUSE

Two fuses are used for RF Chassis low voltage power supply and horizontal sweep circuit protection. (For location, see "Tube Placement Chart".)

FUSE DEVICE

A Circuit Breaker is used for Sweep Circuit low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency slug. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Width control. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive control. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (A15) located on top of chassis.

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

PINCUSHION CORRECTION

Two magnets are taped to picture tube, one just above and one below the yoke.

FLEETWOOD MODELS
870, 900

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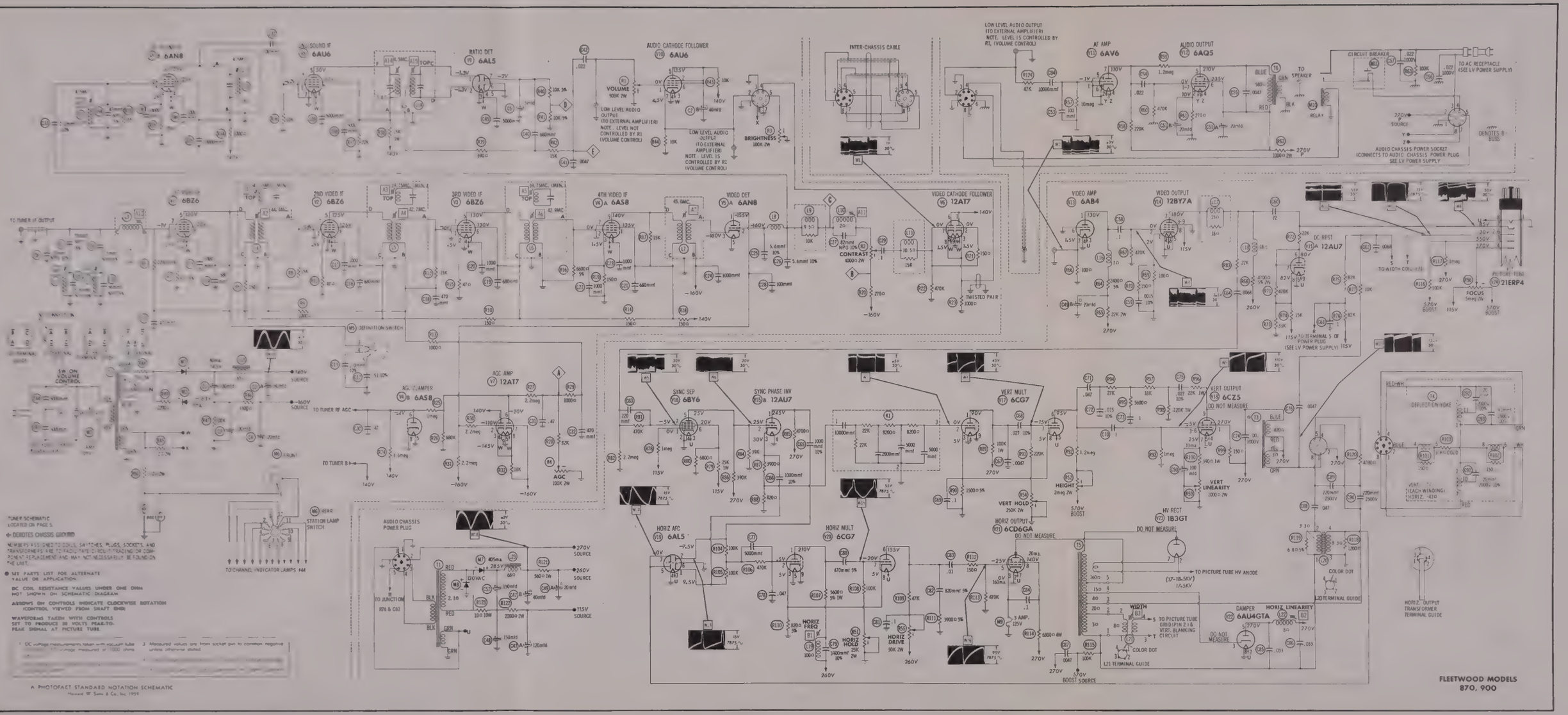
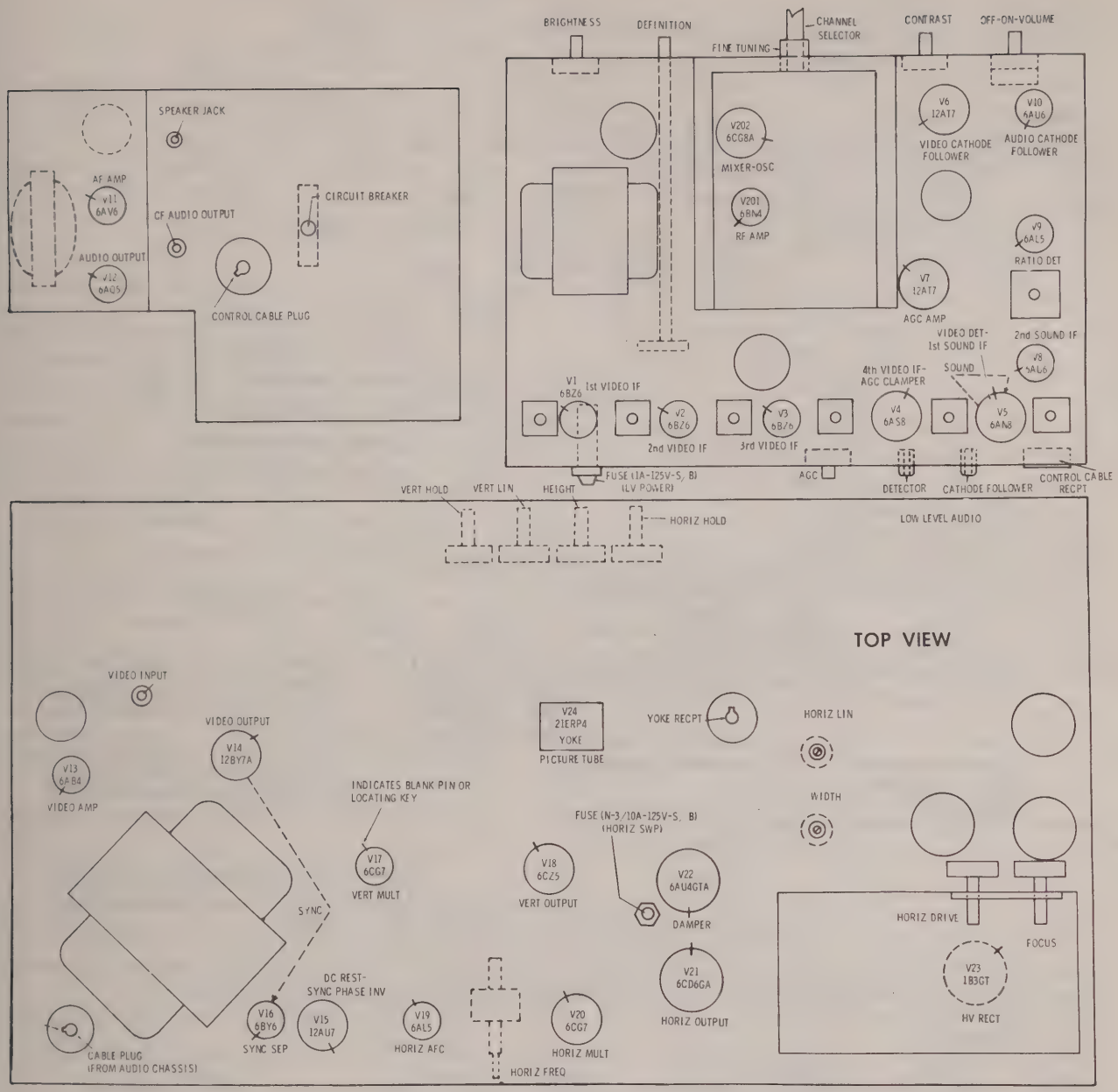

6AN8
SOUND IF
6AU6
RATIO DET
6AL5
AUDIO CATHODE FOLLOWER
6AU6
VOLUME
500K 2W
LOW LEVEL AUDIO OUTPUT (TO EXTERNAL AMPLIFIER) NOTE: LEVEL NOT CONTROLLED BY R1 (VOLUME CONTROL)
BRIGHTNESS
100K 2W
INTER-CHASSIS CABLE
LOW LEVEL AUDIO OUTPUT (TO EXTERNAL AMPLIFIER) NOTE: LEVEL IS CONTROLLED BY R1 (VOLUME CONTROL)
AF AMP
6AV6
AUDIO OUTPUT
6AQ5
TO SPEAKER
CIRCUIT BREAKER
TO AC RECEPTACLE (SEE LV POWER SUPPLY)
AUDIO CHASSIS POWER SOCKET (CONNECTS TO AUDIO CHASSIS POWER PLUG SEE LV POWER SUPPLY)
6BZ6
2ND VIDEO IF
6BZ6
3RD VIDEO IF
6BZ6
4TH VIDEO IF
6A S8
VIDEO DET
6AN8
VIDEO CATHODE FOLLOWER
12AT7
CONTRAST
4000Ω 2W
TWISTED PAIR
VIDEO AMP
6AB4
VIDEO OUTPUT
12BY7A
DC REST
12AU7
PICTURE TUBE
21ERP4
FOCUS
SW ON VOLUME CONTROL
DEFINITION SWITCH
AGC CLAMPER
6AS8
AGC AMP
12AT7
AGC
100K 2W
SYNC SEP
6BY6
SYNC PHASE INV
12AU7
VERT MULT
6CG7
VERT OUTPUT
6CZ5
DO NOT MEASURE
VERT LINEARITY
HEIGHT
2meg 2W
VERT HOLD
250K 2W
HORIZ OUTPUT
6CD6GA
DO NOT MEASURE
HV RECT
1B3GT
HORIZ AFC
6AL5
HORIZ MULT
6CG7
HORIZ FREQ
HORIZ HOLD
25K 2W
HORIZ DRIVE
50K 2W
TO PICTURE TUBE HV ANODE
(17-18.5KV)
17.5KV
WIDTH
DAMPER
6AU4GTA
HORIZ LINEARITY
COLOR DOT
L21 TERMINAL GUIDE
HORIZ. OUTPUT TRANSFORMER TERMINAL GUIDE
TUNER SCHEMATIC LOCATED ON PAGE 5
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND IN THE LIST.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter 11 megohms resistance measured at 1000 ohms.
3 Measured values are from socket pin to common negative unless otherwise stated.
TO TUNER IF OUTPUT
TO TUNER RF AGC
TO TUNER B+
TO CHANNEL INDICATOR LAMPS #44
STATION LAMP SWITCH
AUDIO CHASSIS POWER PLUG
TO JUNCTION R26 & C61
270V SOURCE
260V SOURCE
115V SOURCE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1959
FLEETWOOD MODELS
870, 900

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, Fuse (LV Power)

SWEEP FAILURE
No raster, has sound Fuse (Horiz. Swp), V20, V21, V22, V23, V24, Rect. (B+)
No vertical deflection V17, V18
Poor vert. linearity or foldover V17, V18
Poor horiz. linearity or foldover V20, V21, V22
Narrow picture Rect. (B+), V20, V21, V22
Vert. off freq. V17
Horiz. off freq. V19

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4, V5
No pic, no sound, has snow V201, V202, V1, V2
No pic, has sound, has raster V5, V6, V13, V14, V24
Has pic, no sound V5, V8, V9, V10, V11, V12
Overloaded picture V7, V4

SYNC FAILURE
No vert. sync V15, V17
No horiz. sync V15, V19, V20
No vert. or horiz. sync V16, V15

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8721, 8722
WALSCO #2519

VIDEO IF ALIGNMENT

Set Definition switch to mid-position.
Connect the negative lead of a 3 volt bias supply to point Ⓐ . Positive to chassis.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.001mfd	High side to pin 1 (grid) of 1st Video IF Amp. Low side to chassis.	47.75MC (Unmod)	Any non-interfering channel	DC probe to point Ⓑ . Low side to point Ⓒ. CAUTION: Meter case is -150V.	A1	Adjust for MINIMUM deflection.
2.	"	"	44.9MC	"	"	A2	Adjust for maximum deflection.
3.	"	"	39.75MC	"	"	A3	Adjust for MINIMUM deflection.
4.	"	"	42.7MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	39.75MC	"	"	A5	Adjust for MINIMUM deflection.
6.	"	"	42.9MC	"	"	A6	Adjust for maximum deflection.
7.	"	"	45.0MC	"	"	A7	Adjust for maximum deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001mfd	High side to pin 1 (grid) of 1st Video IF Amp. Low side to chassis.	44.0MC (10MC Swp)	42.0MC 45.0MC 45.75MC	Any non-interfering channel	Vert. Amp. to pin 3 or 8 (Cathode) of Video Cathode Follower. Low side to chassis.		Retouch A2 , A4, A6 and A7 to obtain response similar to Fig. 1 if necessary. A2 will control location of 45.75MC marker, A4 and A6 will control bandwidth and A7 will level response.
9.	"	High side to pin 9 (grid) of Mixer. Low side to chassis. (Use very short leads.)	"	47.25MC	Between channels	"	A8	Connect the negative lead of a 1.5 volt bias supply to Mixer Test Point. Positive to chassis. Adjust to place marker in trap notch. (Fig. 2).
10.	"	"	"	41.25MC	"	"	A9	"
11.	"	"	"	42.0MC 45.0MC 45.75MC	"	"	Mixer Plate Coil, & A10	Adjust for response curve similar to Fig. 3. The Mixer Plate Coil will determine the bandwidth and A10 will adjust for proper tilt and dip.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and set Contrast at maximum. Adjust the Fine Tuning until a beat pattern is visible. Adjust A11 for MINIMUM beat interference.

SOUND IF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
12.	.001mfd	High side to pin 3 (cathode) of Video Detector. Low side to chassis.	4.5MC (Unmod)	Between Channels	DC probe to point Ⓓ . Common to chassis.	A12, A13, A14	Adjust for maximum deflection.
13.	"	"	"	"	DC probe to point Ⓓ . Common to point Ⓔ .	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

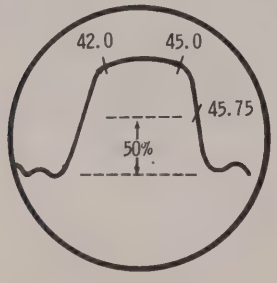


FIG.1

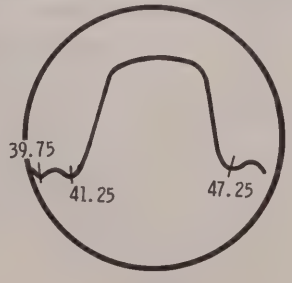


FIG.2

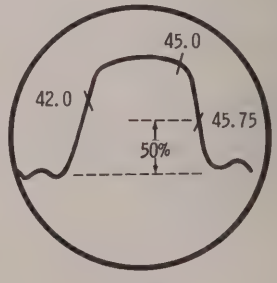
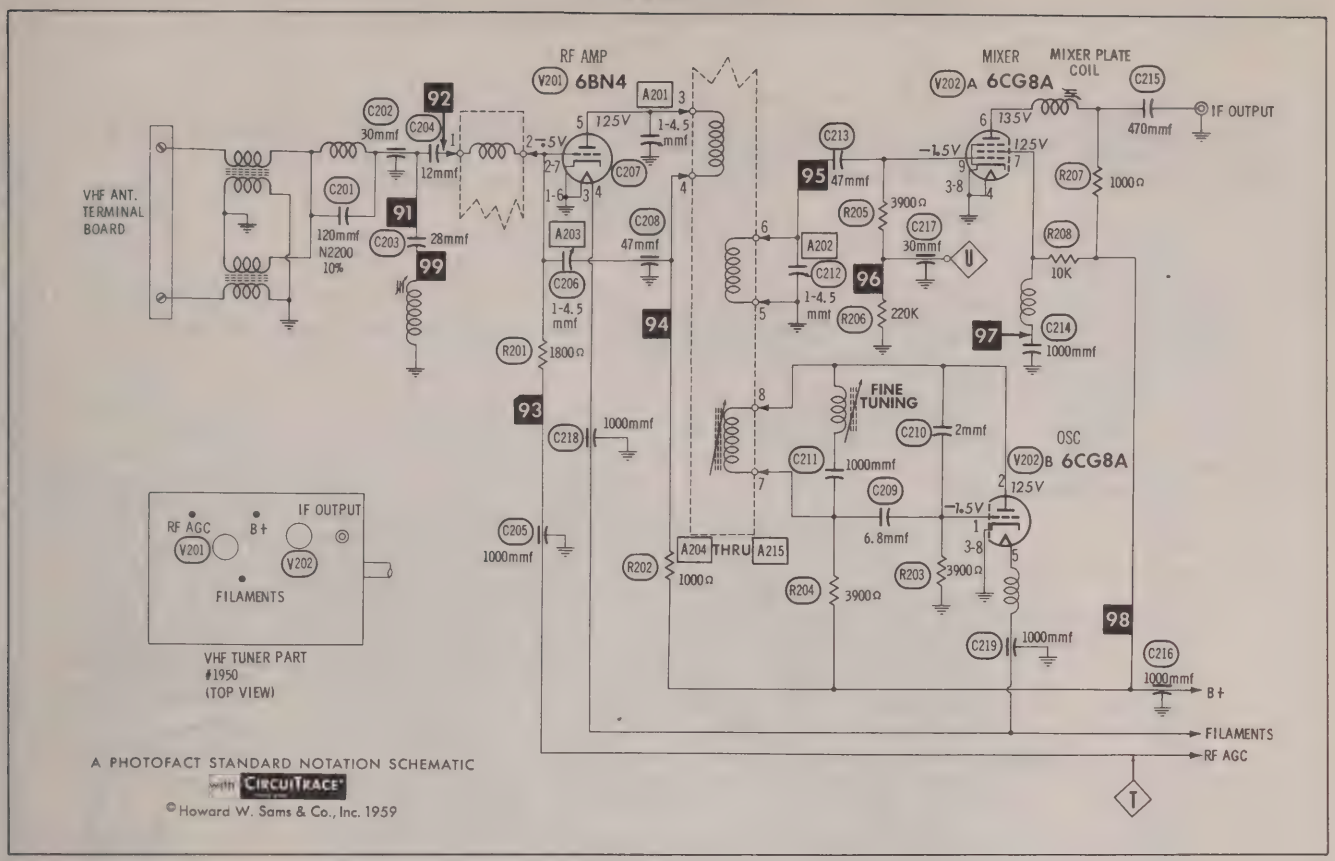


FIG.3



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TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	6BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CG8A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	FLEETWOOD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		N2200 10%							
C202	30									
C203	28									
C204	12									
C205	1000				EF-001	MFT-1000			503C-D1	
C206	1-4.5					829-4		CT551		
C207	1-4.5					829-4		CT551		
C208	47									
C209	6.8									
C210	2									
C211	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C212	1-4.5									
C213	47									
C214	1000				BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C215	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C216	1000				EF-001	MFT-1000			503C-D1	
C217	30									
C218	1000				EF-001	MFT-1000			503C-D1	
C219	1000				EF-001	MFT-1000			503C-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		FLEETWOOD PART No.	NOTES
	OHMS	WATT		
R201	1800Ω			
R202	1000Ω			
R203	3900Ω			
R204	3900Ω			

ITEM No.	RATING		FLEETWOOD PART No.	NOTES
	OHMS	WATT		
R205	3900Ω			
R206	220K			
R207	1000Ω			
R208	10K			

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: A201, A202 and A203.....GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A204 thru A215.....GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537

RF AND MIXER ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis	A201 A202 A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			195MC	193.25MC 197.75MC	10			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			85MC	83.25MC 87.75MC	6			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

FIG. 201

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video det. load.	A204	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

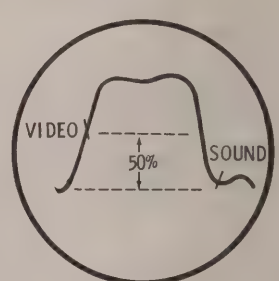
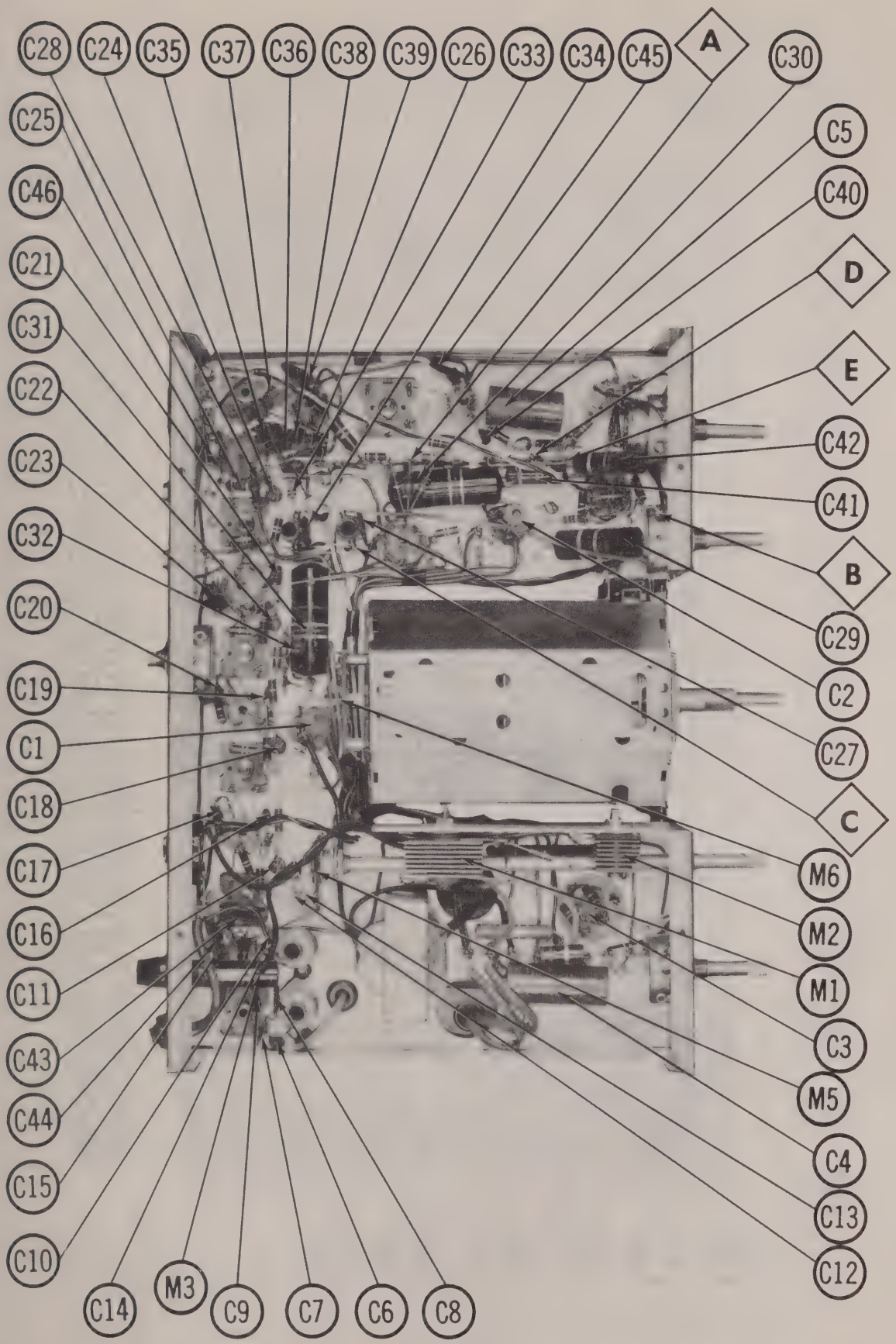
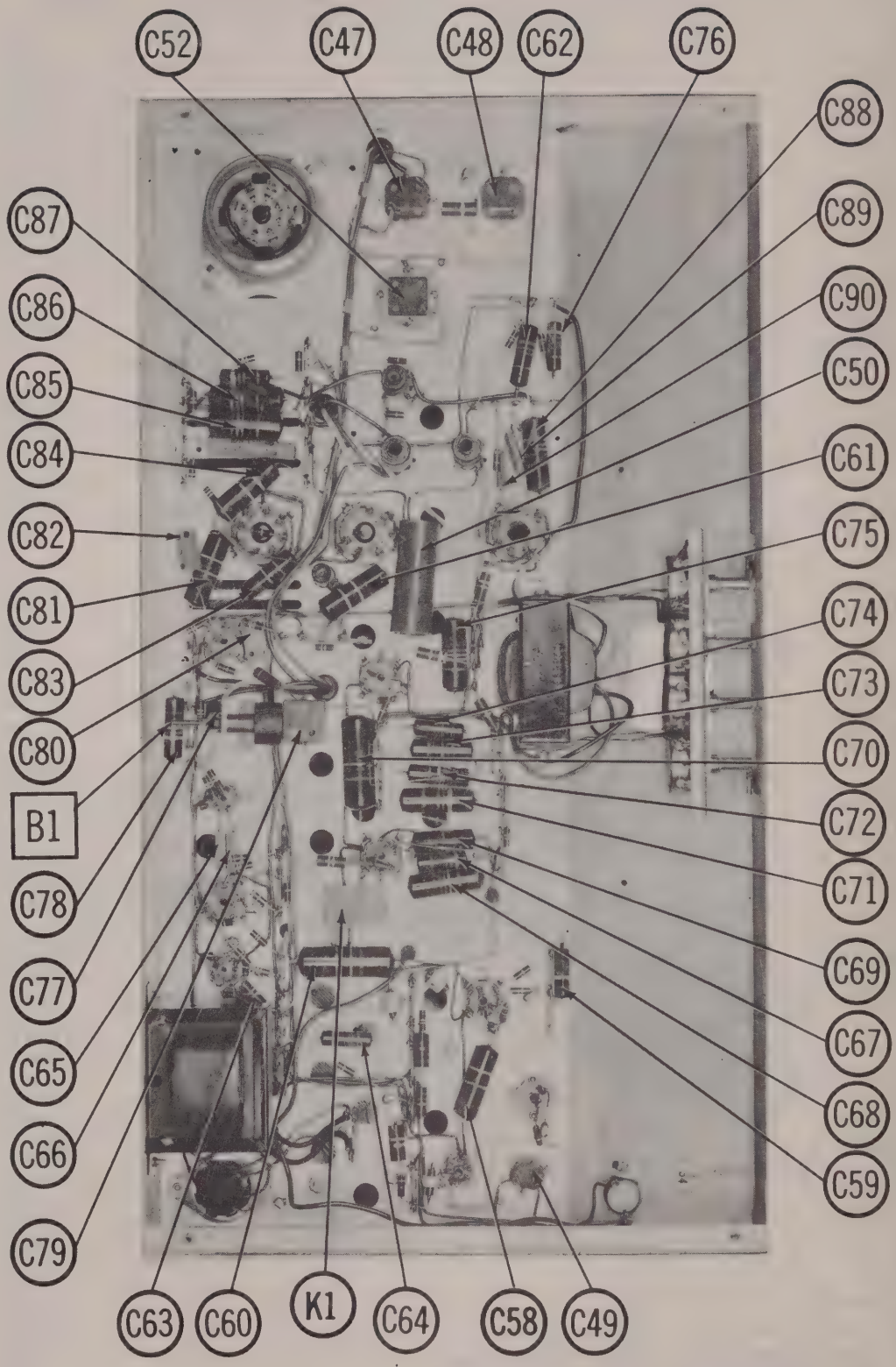


FIG. 202



MODEL 870 BOTTOM VIEW - CAP, ALIGN & MISC IDENT.

SET 458 FOLDER 2



MODEL 900 BOTTOM VIEW - CAPACITOR INDENT.

PARTS LIST AND DESCRIPTIONS

MODEL 870

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6
V2	2nd Video IF Amp.	6BZ6
V3	3rd Video IF Amp.	6BZ6
V4	4th Video IF Amp. - AGC Clamper	6AS8
V5	Video Det. 1st Sound IF Amp	6AN8
V6	Video Cathode Follower	12AT7
V7	AGC Amplifier	12AT7
V8	2nd Sound IF Amp.	6AU6
V9	Ratio Detector	6AL5
V10	Audio Cathode Follower	6AU6

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	FLEETWOOD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	100	150	UPE1005T	AFH1-21	XA0241	FP116	TMS-22	TVL-1423	
C2A	■80	150	UP8415	AFH2-19	XB0181	FP216	TMD-16	TVL-2442.1	
B	▲40	150							
C3	100	150	UPE1005T	AFH1-21	XA0241	FP116	TMS-22	TVL-1423	
C4	20	150		PRS1440	BBR20-150	TC45	TD-20-150	TVA-1410	
C5	5	50		PRS1310	BBR5-50	TC30	TD-5-50	TVA-1303	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	FLEETWOOD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	10		NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	10TCC-Q10	
C7	15		NPO 5%			DTZ-15	C10Q15C	CNO-415	10TCC-Q15	
C8	6.8		NPO 5%			DTZ-6R8	C10V68C	CNO-568	10TCC-V68	
C9	7.5		NPO 5%				C10V8C		10TCC-V75S 5% *	
C10	56		NPO 5%			TCZ-56	C10Q56C	CNO-456	10TCC-Q56	
C11	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C12	.51		10%			TCZ-R5				
C13	1.0		10%		NPO-SI 1.0	TCZ-1		CNO-510	10TCC-V10	
C14	680				BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C15	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C16	680				BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C17	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C18	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C19	680				BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C20	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C21	680				BPD-00068	DD-681	BYA10T68	B-368	5HK-T68	
C22	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C23	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C24	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C25	5.6		10%						10TCC-V56	
C26	5.6		10%						10TCC-V56	
C27	82		NPO 10%			DTZ-82	C10Q82C	CNO-482	10TCC-Q82	
C28	100				BPD-0001	DD-101	L10T1	UC-531	5GA-T10	
C29	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C30	.47	200			P288N-47		CUB2P47	GEM-4047	2TM-P47	
C31	.47	200			P288N-47		CUB2P47	GEM-4047	2TM-P47	
C32	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C33	2.2		10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CNO-522	10TCC-V22	
C34	47		NPO 5%			DTZ-47	C10Q47C	CNO-447	10TCC-Q47	
C35	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S10	
C36	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S10	
C37	100				BPD-0001	DD-101	L10T1	UC-531	5GA-T10	
C38	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D50	
C39	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D50	
C40	680				BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C41	.0047	400			P488N-0047	D6-472	CUB6D47	GEM-6147	6TM-D47	
C42	.022	400			P488N-022		CUB4S22	GEM-4122	4TM-S22	
C43	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D50	
C44	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D50	
C45	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D50	
C46	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FLEETWOOD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	2	1092	B-60-S	A47-500K-Z	Q13-133	U-48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	4000Ω	2	1224	B-9	A47-4000-S	Q11-114	U14	Contrast
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	100K	2	1109	B-40	53C1-100K-S	Q11-128	U41	Brightness
B	Shaft			Not Req.	Not Req.	Not Req.	Not Req.	
R4A	100K	2	884	AB-40	A47-100K-S	B11-128	SU41	AGC
B	Shaft			AK-1	FKS-1/4	SK2	Not Req.	

PARTS LIST AND DESCRIPTIONS (Continued)

MODEL 900

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	WATT	FLEETWOOD PART No.	NOTES
R5	22000 5%			
R6	150Ω			
R7	51Ω 5%			
R8	15K			
R9	1000Ω			
R10	150Ω			
R11	47Ω			
R12	15K			
R13	1000Ω			
R14	150Ω			
R15	47Ω			
R16	68000 5%			
R17	15K			
R18	150Ω			
R19	150Ω			
R20	270Ω			
R21	150Ω			
R22	470K			
R23	1000Ω			
R24	3.3meg			
R25	1meg			
R26	680K			
R27	2.2meg			
R28	82K			
R29	1000Ω			
R30	2.2meg			
R31	2.2meg			
R32	10K			
R33	15K			
R34	1000Ω			
R35	270Ω			
R36	10K			
R37	22K			
R38	15K	1		
R39	390Ω			
R40	10K 5%			
R41	10K 5%			
R42	15K			
R43	10K			
R44	150Ω			
R45	1.2Ω	2		
R46	3300Ω			
R47	100K			
R48	22Ω	2		
R49	3200Ω			
R50	1.2Ω	2		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: FLEETWOOD PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No	NOTES
L1	41.25MC Trap	1574				6226		
L2	47.25MC Trap	1578	20-1049	20-1049		6225 ▲		
L3	1st Video IF	1571						
L4A	2nd Video IF	1576						
B	47.25MC Trap							
L5A	3rd Video IF	1074		17-4531	17-4531			
B	39.75MC Trap							
L6A	4th Video IF	1094		17-4531	17-4531			
B	39.75MC Trap							
L7	5th Video IF	1572						
L8	Resonant Choke	1148						T. 4th
L9	Series Peaking Coil	1804		19-3100 ●	TV-194 ●	6112 ●		VP-3 ● 9Tab ①
L10	4.5MC Trap	1043	20-1004	20-1004	TV-119	1469 ▲		SF-3 11Tab ②
L11	Series Peaking Coil	1805		19-3125 ●	TV-195 ●	6153 ●		VP-4 ●
L12	1st Sound IF	1079		17-5400	TV-151	1469 ▲		SF-3
L13	2nd Sound IF	1906		17-1031	17-1031			
L14	Ratio Detector	968B		17-1003	TV-110	1468		RD-4 ▲

● Parallel with 10K resistor. ▲ Disregard tap. ◆ Parallel with 15K resistor. ■ Use adapter plate.
① Wound on 10K resistor. ② Wound on 15K resistor.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~(.)	REPLACEMENT DATA: FLEETWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L15	.080A	88Ω	2.1 Hy.	1044B	26C41	C-2894	F-804	C-2327	26C41	C-24X

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: FLEETWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ▲ .61A	130V @ 210AIAC tap 97V 805 used	6.3V @ 4.8A	1043B						

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	FLEETWOOD PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.080A	100MA ①	1235AH ①	T100 ①	100A ①	SR200 ②	① Selenium Type.
M2	.003A	50MA ①	K1734 ①	R3050 ①	50 ①	SR200 ②	② Silicon Type.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: FLEETWOOD PART No. FUSE	FLEETWOOD PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG	1A 125V S/B			313001 (3AG 1A 125V S/B)	342001	MDL 1	HKP

MISCELLANEOUS

ITEM No.	PART NAME	FLEETWOOD PART No.	NOTES
M4	Tuner	1950	VHF
M5	Switch	1913	Definition
M6	Switch	1081	Wafer (Station Lamps)

TUBES

ITEM No	CBS / GENERAL ELECTRIC: USE	TYPE
V11	AF Amplifier	6AV8
V12	Audio Output	6AQ8
V13	Video Amplifier	6AB4
V14	Video Output	12BYTA
V15	DC Rest. -Sync Phase Inv.	12AU7
V16	Sync Sep	6BY6
V17	Vert. Mult	6CG7

ITEM No	RAYTHEON / SYLVANIA: USE	TYPE
V18	Vert. Output	6CZ5
V19	Horiz. AFC	6AL5
V20	Horiz. Mult.	6CG7
V21	Horiz. Output	6CD6GA
V23	Damper	6AU4GTA
V23	HV Rect.	1B3GT

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: FLEETWOOD PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V24	21ERP4 *				21ERP4 ① *	① Silver Screen "85"

* NOTE: This tube has a laminated integral safety panel. The surface of this integral panel is frosted.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: FLEETWOOD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C47A	▲120	400	UPT123	AFE3-45-60	EG336	FP329.5	TMD-91	TVL-3679	
B	▲40	400							
C48	150	200	UPS1502T	AFE1-31-75	XA0315	FP151	TME-34	TVL-1540	
C49A	▲20	350	UP3235	AFE3-27	EG310	FP327	TMD-35	TVL-3755	
B	●20	350							
C50	100	50	PRS1350	BR1005	TC3501	TD-100-50	TVA-1310		
C51A	●20	350	UP3035C	AFE3-84	EG610	FP327	TMD-70	TVL-3604	
B	▲20	25							
C52	150	200	UPE1502T	AFE1-31-75	XA0315	FP151	TME-34	TVL-1540	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	TOL	REPLACEMENT DATA: FLEETWOOD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C53	100				BPD-0001	DD-101	L10T1	UC-S31	SGA-T1	
C54	.022	600			P688N-022		CUB6S22	GEM-6122	6TM-S22	
C55	.0047	600			P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C56	.022	1000			P10S8N-023		CUB1G822	GEM-10122	MB-S22	
C57	.022	1000			P10S8N-022		CUB1G822	GEM-10122	MB-S22	
C58	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C59	.0015	600	10%		Y84C8D15 10%	DD-152	PM6D15	GTM-6D15	6TM-D15	
C60	.22	400			P488N-22		CUB4P22	GEM-4022	4TM-P22	
C61	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C62	.0068	600			P688N-0068	D6-682	CUB6D68	GEM-6368	6TM-D68	
C63	220				1468-00022	D6-221	22R5T22	MC240	3TM-S22	
C64	.0068	600			P488N-0068	D6-682	CUB6D68	GEM-6368	6TM-D68	
C65	1000		10%		1468-001K	DD-102	1R5D1	MCB255	MB-S1	
C66	1000		10%		1468-001K	DD-102	1R5D1	MCB255	MB-S1	
C67	.0047	600			P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C68	.027	600	10%		P684CM-027				6TM-S3	
C69	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C70	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C71	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	6TM-S47	
C72	.015	600	10%		Y84C8S15 10%		PM6S15	GTM-6115	6TM-S15	
C73	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C74	.001	1000			P10S8N-001	DD-102	CUB1D1	GEM-1021	MB-D1	
C75	.027	600	10%		P684CM-027				6TM-S3	
C76	.0047	600			P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C77	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D50	
C78	.047	200			P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C79	3900		10%		1467-0039K		1R5D39	MCB463	MB-S39	
C80	470		5%		1468-0047J		22R5T47	MC245	MB-S47	
C81	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C82	820		5%		1468-0082J		1R5T82		MB-S82	
C83	.01	600			P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C84	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C85	.033	600			P688N-033		CUB6S33	GEM-6133	6TM-S33	
C86	.013	600			P688N-013		CUB6S13	GEM-6133	6TM-S33	
C87	.0047	600			P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C88	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C89	220	2500						3HV-322	50GA-T22	
C90	220	2500						3HV-322	50GA-T22	
C91	120	2000	10%						30GA-T125 10% *	
C92	120	2000	10%						30GA-T125 10% *	
C93	91	2500	10%						30GA-T91S 10% *	
C94	10000				BPD-01	DD-103	BYA10S	B-110	5HK-S1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: FLEETWOOD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R51A	25K	2	2617	AB-26	A47-25K-S	QU-130	U29	Horiz. Hold
B	Shaft			AK-9	RS-2	PQ	Not Req.	
R52A	2meg	2	2614	AB-75	A47-2meg-S	QU-159	U56	Height
B	Shaft			AK-9	RS-2	PQ	Not Req.	
R53A	1000Ω	2(WW)	2615	WW-102	A43-1000	WPK1000	RU000L	Vert. Linearity
B	Shaft			Not Req.	RS-2	Not Req.	DS-36	
R54A	250K	2	2616	AB-50	A47-250K-S	QU-130	U46	Vert. Hold
B	Shaft			AK-9	RS-2	PQ	Not Req.	
R55A	50K	2	2618	AB-31	A47-50K-S	QU-133	U35	Horiz. Drive
B	Shaft			AK-9	RS-2	PQ	Not Req.	
R56A	5meg	2	2619	AB-87	A47-5meg-S	QU-141	U57	Focus
B	Shaft			AK-9	RS-2	PQ	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	WATT	FLEETWOOD PART No.	NOTES
R57	100meg			
R58	220K			
R59	1.2meg			
R60	470K			
R61	270Ω			
R62	1000Ω	2		
R63	100K			
R64	2400Ω 5%			
R65	22K	2		
R66	100Ω			
R67	470K			
R68	4700Ω 5%	2		
R69	100Ω			
R70	150Ω			
R71	470K			
R72	22K			
R73	33K			
R74	15K			
R75	62K			
R76	82K			
R77	10K			
R78	1meg			
R79	15K	1		
R80	36000Ω			
R81	470K			
R82	2.2meg			
R83	22K			
R84	39K			
R85	4700Ω			
R86	390K			
R87	3900Ω			
R88	92Ω			
R89	100K	1		
R90	18000Ω 5%			
R91	120K			
R92	1.2meg			
R93	1meg			
R94	27K			
R95	56000Ω			
R96	22K	1		
R97	18K			
R98	120K	1		
R99	150Ω			
R100	390Ω	1		
R101	150Ω			
R102	150Ω			
R103	3.9Ω Cold			
R104	R104			
R105	R105			
R106	470K			
R107	56000 5%	1		
R108	100K			
R109	47K			
R110	8200 5%			
R111	3900Ω 5%			
R112	150Ω			
R113	470K			
R114	68000	4		
R115	100K			
R116	100K			
R117	1meg			
R118	12000Ω			
R119	6.8Ω 5%			
R120	47000			
R121	560Ω	1		
R122	2200Ω	3		
R123	10Ω	16		
R124	47K			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: FLEETWOOD PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No	NOTES
L16	Series Peaking Coil	1533						53uh
L17	Series Peaking Coil	1217		19-4301 ●	TV-197 ●	6154 ●		200uh ③
L18	Series Peaking Coil	1704		19-3300	TV-200	6132		316uh

③ Wound on 18K resistor. ● Parallel with 18K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	SEC.	REPLACEMENT DATA: FLEETWOOD PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L19	100Ω		994	HS-5	TV-165 ●	6310	H-103	HS-5	Horiz. Stab. ● Disregard tap.

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: FLEET-WOOD PART No	Halldorson PART No	Merit PART No	Miller PART No	Ram PART No	Rogers PART No.	Stancor PART No	Thordarson PART No	Triad PART No
L20	AFC	849								WLC-10 ①
A	Primary (.7MH)									
B	Secondary (3.7MH)									
L21	Width	2720								
A	Primary (1.5-11MH)									
B	Secondary(.02-.04MH)									
L22	Linearity (1.5-11MH)	1867	WC-22 ①	MWC-6	6322	201R15 ②	QRC103 ①	WC-8A	WC-22 ①	WLC-5

① Drill new mounting hole. ② Adjust for 15VPP at AFC Diode.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~(.)	REPLACEMENT DATA: FLEETWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No
L23	280A	68Ω	3.2 Hy.	1058A	26C44 ①	C-2996		C-2334 ①	26C44 ①	C-17X

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	FLEETWOOD PART No.	REPLACEMENT DATA	
K1	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 10000mmf, 8200Ω, 8200Ω, 2.2Ω, 22K		Aerovox Centralab Sprague	PA-111 PC-101 V-3

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: FLEETWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No	Stancor PART No	Thordarson PART No.	Triad PART No.
T2	117V ② 1.6A	120V ② 1A (AC)	6.3V ② 8.5A	2322						

FLEETWOOD MODELS 870, 900

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							
		FLEETWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T3	Vert. Output	2227A			V319				A-140X
	Alt. Vert. Output	2227							
T4	Yoke-Horiz. (19MH) (110°)-Vert. (12MH)	2434	Y-47 ①		Y-111 ①		DY-26A ①	Y-47 ①	Y-60-2
T5	Horiz. Output	2433					HO-292 ②*		D-186 *

① Use original rear cover, centering device, and yoke clamp. ② Drill new mounting hole(s).

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	5					8		5
	4					4		4
	3					3		3
	2					2		2
	1					1		1
Connect Width Coil Across →	2 & 1					2 & 1		2 & 1
Special Notes →						③		③

③ Adjust linearity coil for minimum cathode current of V21 (6CD6GA).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	FLEETWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	5200Ω	3-4Ω	2624	24S92	A-2935	AU-609	A-3870	24S92	S-5X	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	FLEETWOOD PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M7	.405A	1N1084 ①	TV500 ①	HA504 ①	M500 ①	SR500 ①	① Silicon Type.
M8	.405A	1N1084 ①	TV500 ①	HA504 ①	M500 ①	SR500 ①	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FLEETWOOD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M9	N	.3A 125V S/B			333.300 (N 3/10 125V S/B)	346008	N 3/10	HC 3/10 to 1/2

MISCELLANEOUS

ITEM No.	PART NAME	FLEETWOOD PART No.	NOTES
M10	Relay		
M11	Circuit Breaker		

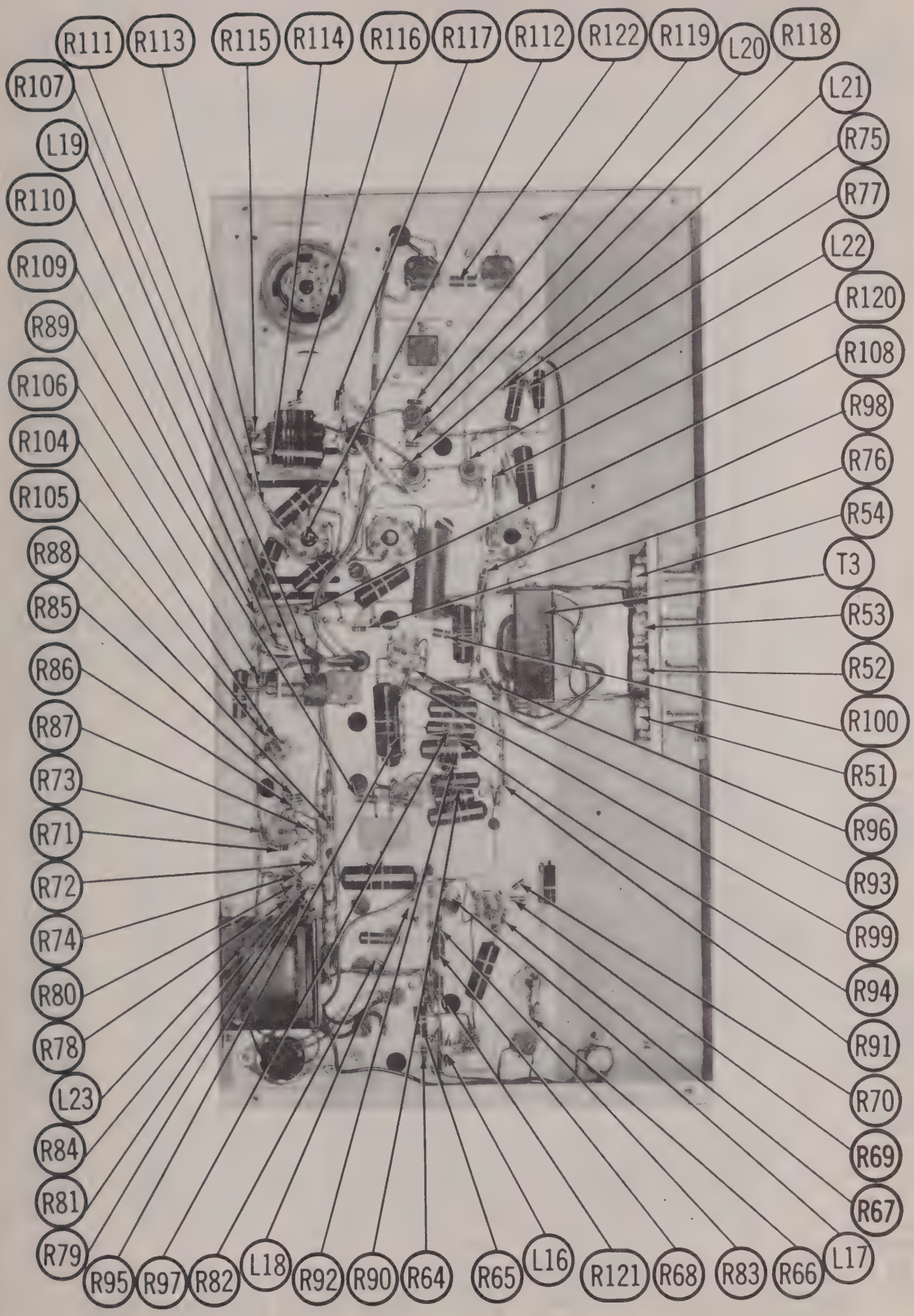
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

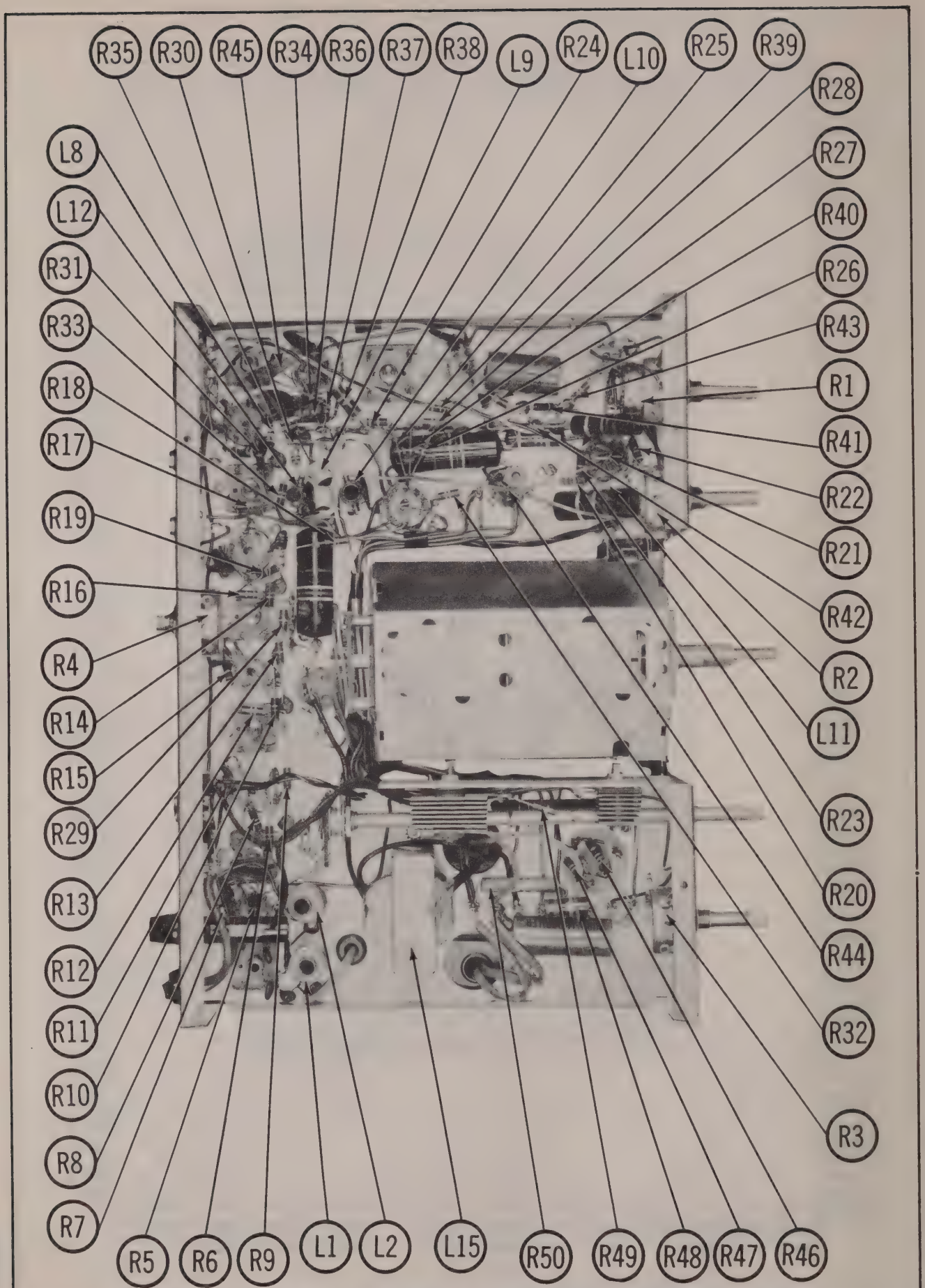
NAME	PART NO.	DESCRIPTION
Knob	1166	Channel Selector
Knob	1165	Fine Tuning
Knob	1170	Off-On-Volume, Contrast, Definition, Brightness

WIRING DATA

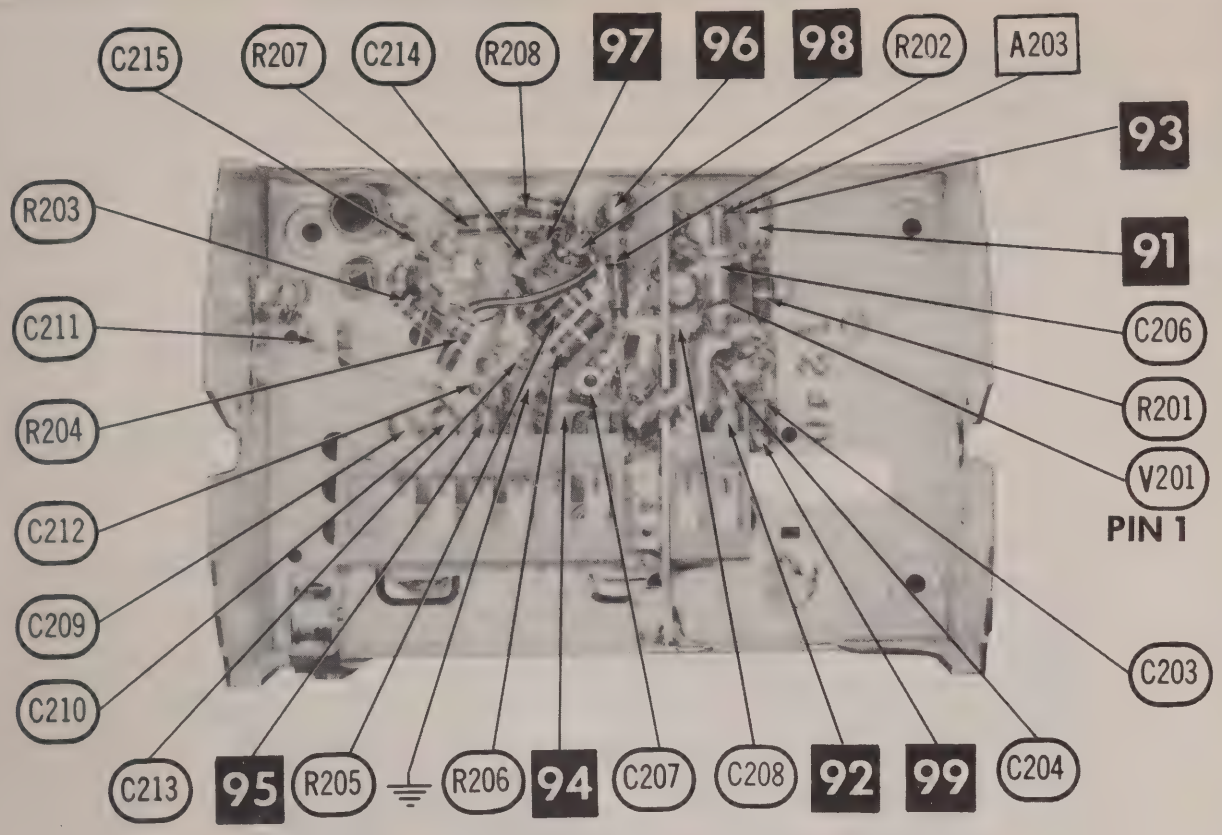
High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor



MODEL 900 BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.

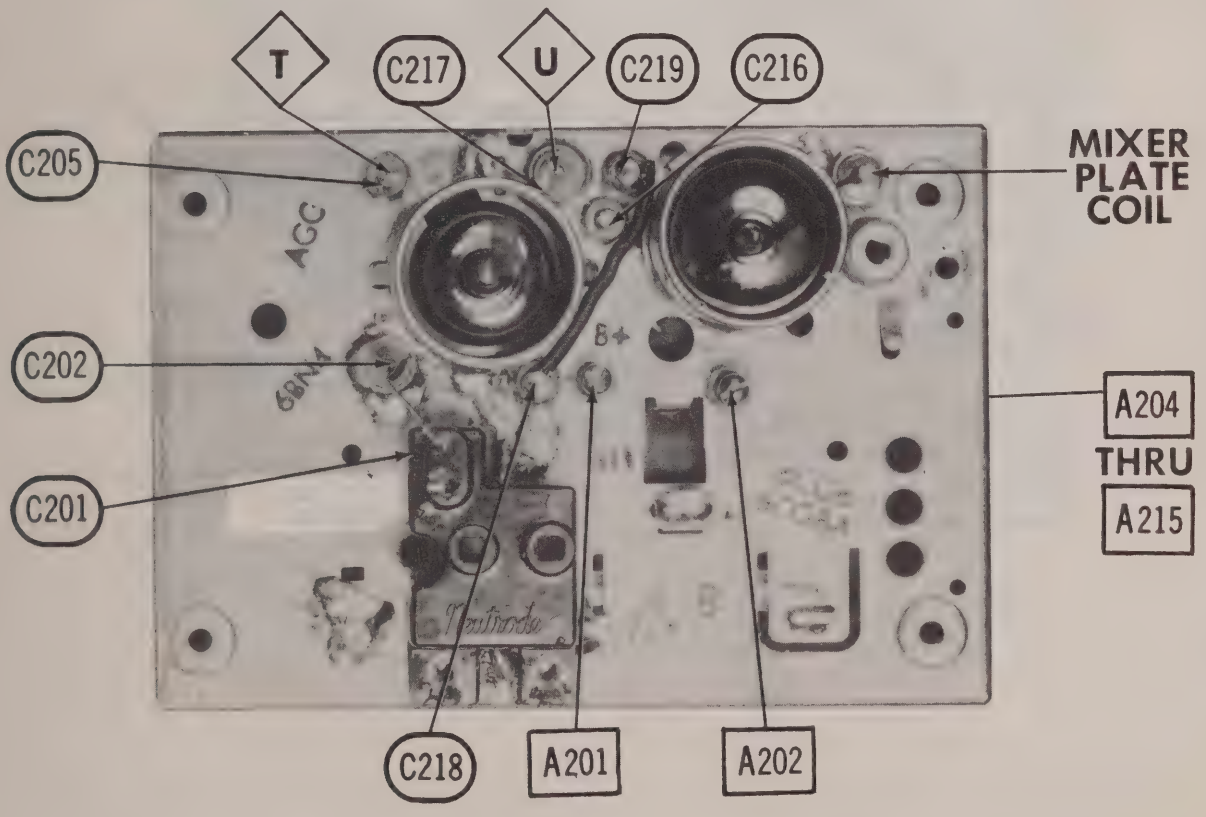


MODEL 870 BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.



A Howard W. Sams CIRCUITRACE® Photo

TUNER
BOTTOM VIEW

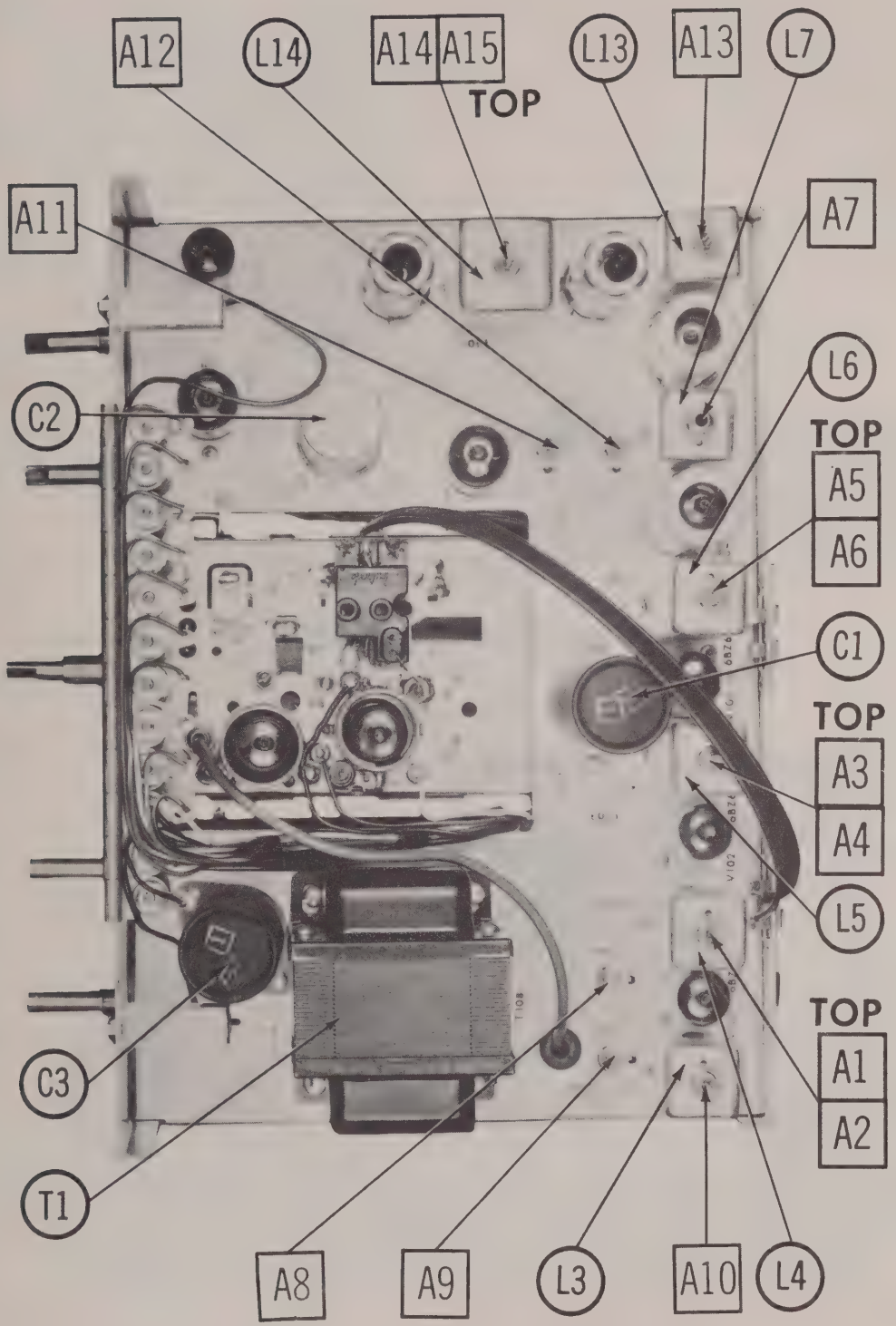


TUNER TOP VIEW

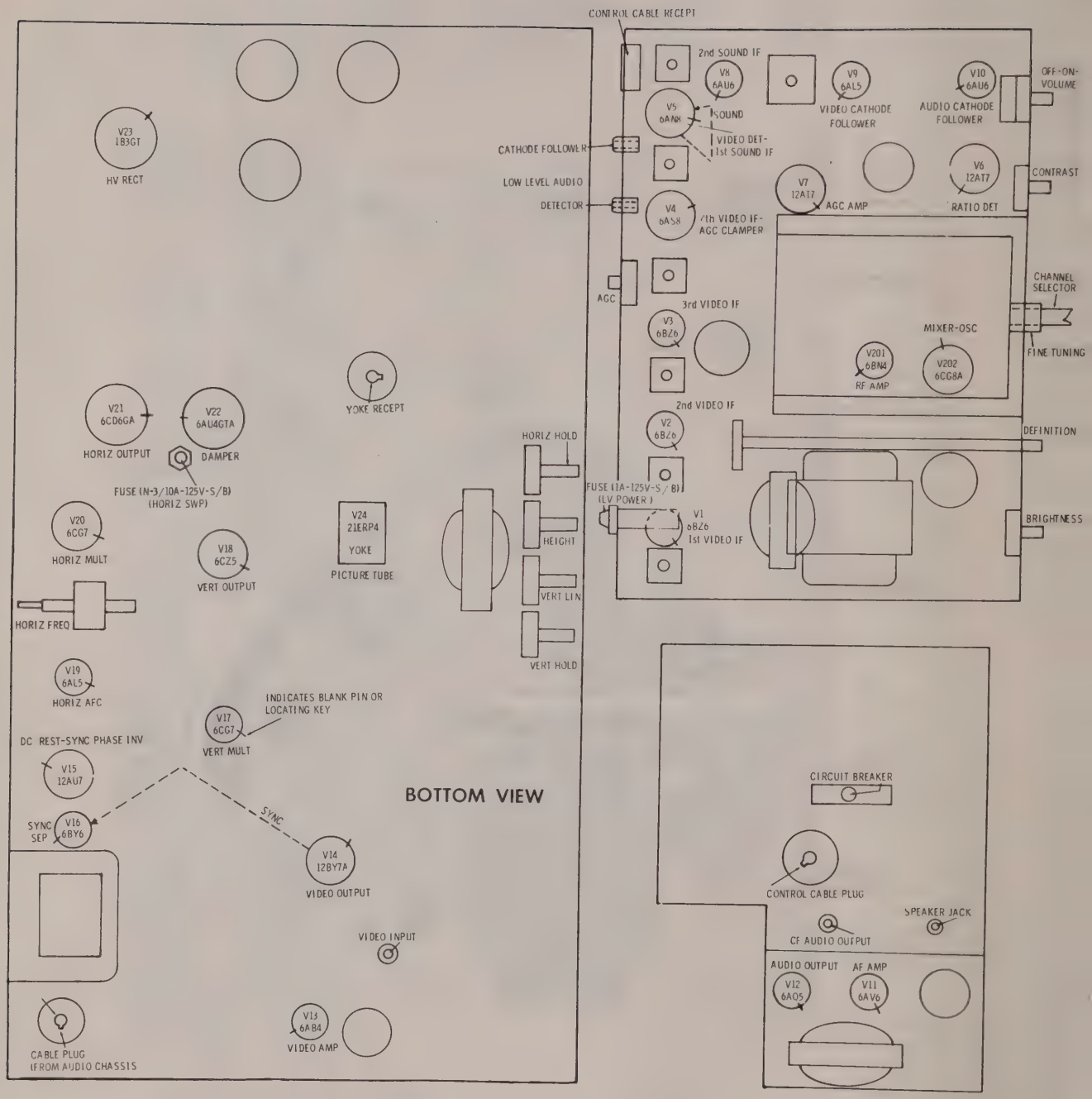
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	●180K	51Ω	.1Ω	0Ω	†600Ω	†600Ω	0Ω		
V2	6BZ6	●180K	47Ω	.1Ω	0Ω	†450Ω	†450Ω	0Ω		
V3	6BZ6	●180K	47Ω	.1Ω	0Ω	†300Ω	†300Ω	0Ω		
V4	6AS8	†150Ω	.1Ω	150Ω	.1Ω	0Ω	1meg	0Ω	0Ω	†150Ω
V5	6AN8	▲ 2.2meg	▲ 7300Ω	▲ 3300Ω	.1Ω	0Ω	†1000Ω	†1000Ω	1.7Ω	270Ω
V6	12AT7	†0Ω	470K	1000Ω	.1Ω	.1Ω	†0Ω	470K	1000Ω	0Ω
V7	12AT7	†0Ω	▲ 4.4meg	▲ 13K	.1Ω	.1Ω	500K	▲ 3300Ω	▲ 13K	0Ω
V8	6AU6	10K	0Ω	0Ω	.1Ω	†15K	†15K	0Ω		
V9	6AL5	INF	INF	0Ω	.1Ω	0Ω	0Ω	20K		
V10	6AU6	0Ω	†10K	.1Ω	0Ω	†10K	†10K	10K		
V11	6AV6	10meg	0Ω	0Ω	.1Ω	0Ω	0Ω	††220K		
V12	6AQ5	470K	270Ω	0Ω	.1Ω	††1500Ω	††1000Ω	470K		
V13	6AB4	††24K	NC	.1Ω	0Ω	0Ω	0Ω	100Ω		
V14	12BY7A	100Ω	470K	0Ω	0Ω	0Ω	.1Ω	†5300Ω	♦ 0Ω	0Ω
V15	12AU7	††4700Ω	††300K	4700Ω	0Ω	0Ω	♦ 480K	♦ 480K	♦15K	.1Ω
V16	6BY6	♦ 1meg	0Ω	.1Ω	0Ω	††300K	♦ 10K	2.7meg		
V17	6CG7	††100K	70K	1500Ω	0Ω	.1Ω	● †2.7meg	●300K	1500Ω	0Ω
V18	6CZ5	††150Ω	NC	1meg	.1Ω	0Ω	1meg	●600Ω	NC	††420Ω
V19	6AL5	INF	INF	.1Ω	0Ω	10Ω	0Ω	10Ω		
V20	6CG7	††6200Ω	INF	820Ω	.1Ω	0Ω	●††70K	●110K	820Ω	0Ω
V21	6CD6GA	TP	0Ω	0Ω	NC	470K	NC	.1Ω	††6800Ω	TOP CAP ǂ 14Ω
V22	6AU4GTA	NC	NC	¶1meg	0Ω	†10Ω	NC	.1Ω	0Ω	
V23	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ǂ375Ω
V24	21ERP4	0Ω	●100K	ǂ200K	●ǂ1.5meg	NC	NC	♦ 520K	.1Ω	
V201	6BN4	0Ω	1meg	0Ω	.1Ω	†1000Ω	0Ω	1meg		
V202	6CG8A	3900Ω	†3900Ω	0Ω	0Ω	.1Ω	†1000Ω	†10K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

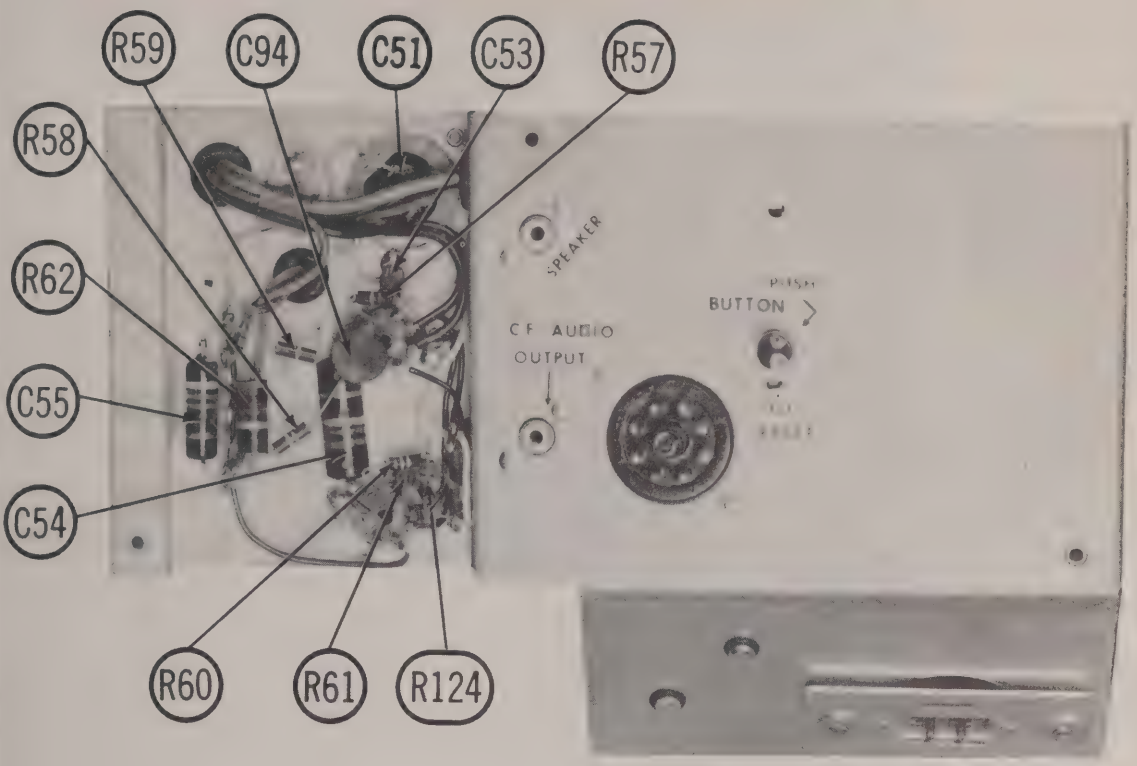
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 140V SOURCE.
†† MEASURED FROM 270V SOURCE.
ǂ MEASURED FROM PIN 3 OF V22.
▲ MEASURED FROM NEGATIVE SIDE OF M2.
♦ MEASURED FROM 115V SOURCE.
NC NO CONNECTION
TP TIE POINT



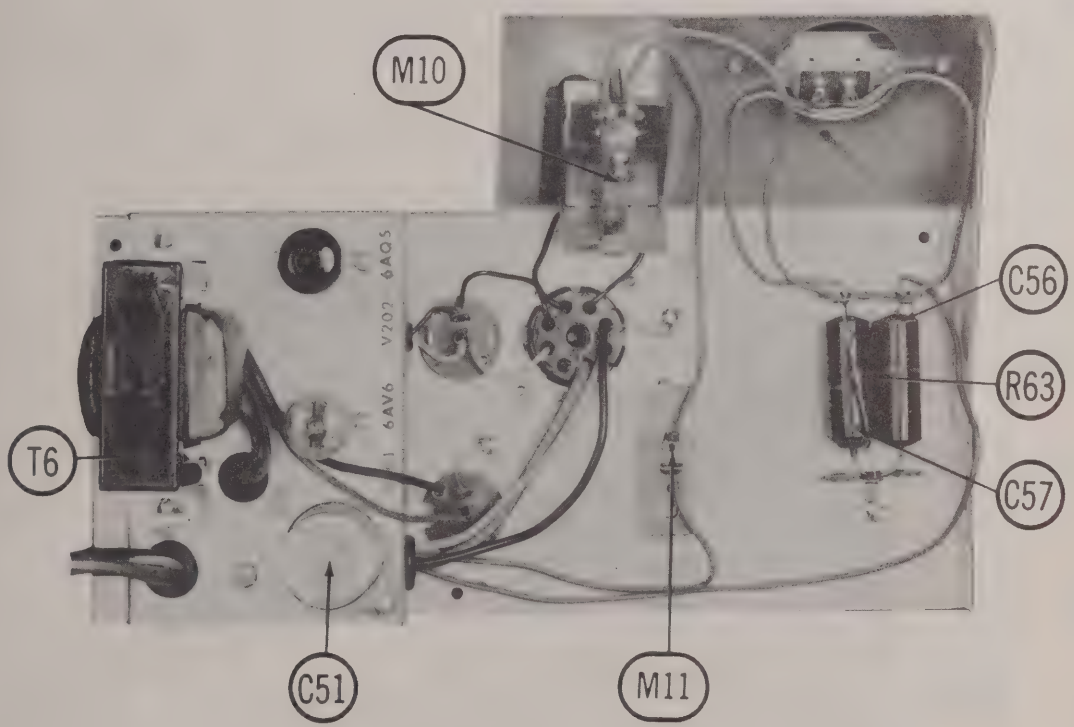
MODEL 870 TOP VIEW



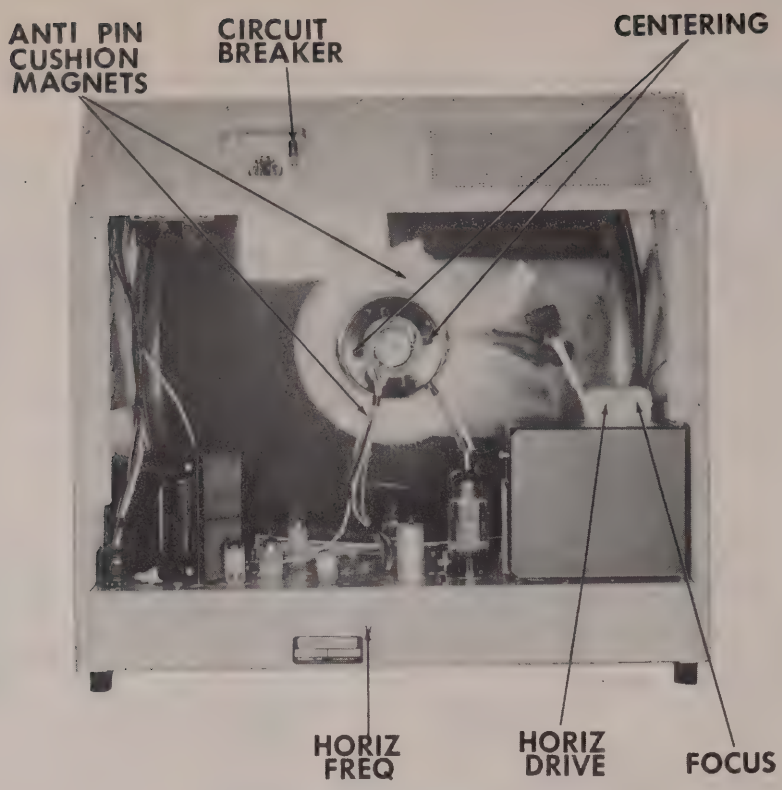
TUBE PLACEMENT CHART



AUDIO CHASSIS TOP VIEW



AUDIO CHASSIS BOTTOM VIEW



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Suggested Alignment Tools: GENERAL CEMENT #8721, 8722
WALSCO #2519

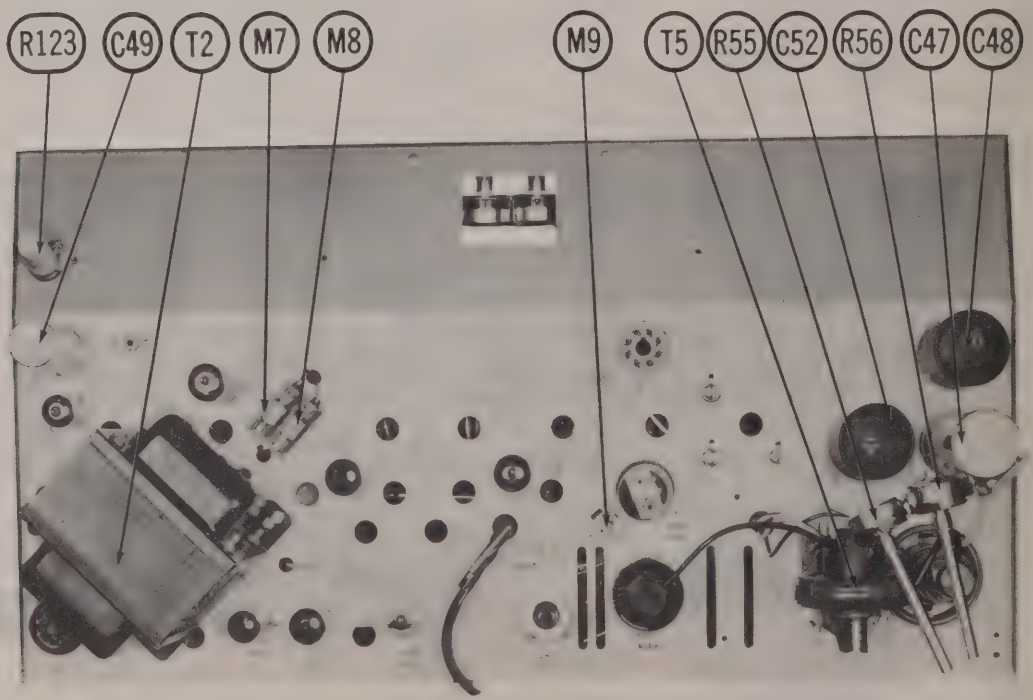
Tune in a TV station and connect a clip lead from the grid (pin 2) of the Horizontal Multivibrator to chassis.

Set the Horizontal Hold to the center of its range and adjust the Horizontal Frequency slug (B1) until the picture nearly stops. Remove the clip lead.

Connect the DC probe of a VTVM to pin 3 (cathode) of the Horizontal Output tube. Common to chassis. Adjust the Horizontal Linearity slug (B2) for MINIMUM deflection on the 3 volt scale. Observe the picture and retouch B2 for proper linearity. Proper adjustment will be within one-half turn.

Turn the Horizontal Drive clockwise until a white vertical line appears near the center of the screen. Turn the Drive counterclockwise until the line disappears. If no drive line appears, leave the control set for the best horizontal linearity.

Adjust the Width slug (B3) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.



MODEL 900 TOP VIEW

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PRODUCTION CHANGE BULLETIN 226

PRODUCTION CHANGE BULLETIN 226

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 8 IN SET 437

HARMONY MODEL 46

Harmony Model 46 was covered in PHOTOFACT Folder 8 - Set 437.

During late production, the following production changes were made.

COMPONENT CHANGES

C28 is increased from 470mmf to 2000mmf.

C2 is decreased from 25mfd to 5mfd.

R28 is increased from 22K to 100K.

C7 is omitted.

R5 is omitted.

When R5 and C7 are omitted, R4 and L1 are connected to ground.

C37 is decreased from 2000mmf to 470mmf.

A 100mmf capacitor is added from the center arm of R1 (Volume) to ground.

C39 is increased from 5000mmf to 20000mmf.

C1B is decreased from 100mfd to 60mfd.

C1D is increased from 40mfd to 100mfd.

V7 (Output) is changed from 35C5 to 50C5.

LOW VOLTAGE POWER SUPPLY CHANGED

V8 (Rectifier) is changed to a selenium rectifier power supply. A partial schematic showing the new circuit is given on the reverse side.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 14 IN SET 436

SILVERTONE MODELS 9024, 9025 (CH. 528.53720)

Silvertone Models 9024, 9025 (Ch. 528.53420) were covered in PHOTOFACT Folder 14 - Set 436.

Late in production, the following production changes were made. With these changes the chassis number changes to 528.53720.

Ch. 528.53720

COMPONENT CHANGES

C2 is decreased from .047mfd @ 200V to .02mfd @ 500V.

C3 is increased from 1000mmf to 10000mmf.

C4 is decreased from 47mmf to 18mmf.

C5 is omitted.

C7 is omitted and the case of R1 is connected to terminal 2 of L3.

R5 is omitted.

R6 is increased from 68Ω to 82Ω.

R12 is omitted.

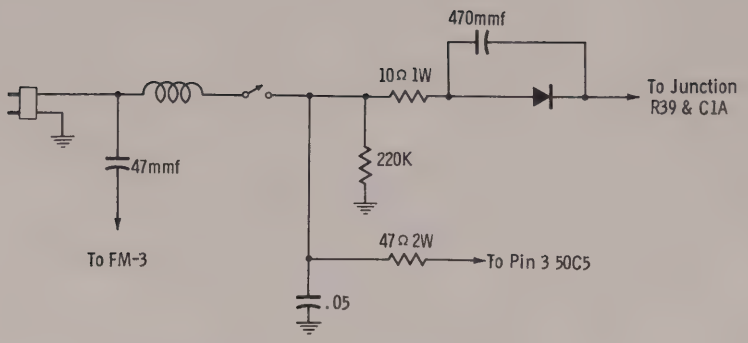
A 470mmf @ 500V capacitor is added between L1 and pin 1 of V1.

A 5000mmf @ 500V capacitor is added from C4 to the junction of terminal 3 of L3 and CircuiTrace point 4.

A 2.2meg resistor and a .047mfd @ 200V capacitor (wired in series) are added from pin 1 of V1 to ground. With these additions, R3 is disconnected from the junction of C2 and R5 and reconnected to the junction of the resistor and capacitor added above.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1 IN SET 441

AIRLINE MODELS WG-4065A, B, 4165A, B, 5060A, B, 5061A, B, 5062A, B, 5067A, B, 5071A, B, 5077A, B, 5160A, B, 5162A, B, 5172A, B

Airline Models WG-4065A, B, WG-4165A, B, WG-5060A, B, WG-5061A, B, WG-5062A, B, WG-5067A, B, WG-5071A, B, WG-5072A, B, WG-5077A, B, WG-5160A, B, WG-5162A, B, WG-5172A, B were covered in PHOTOFACT Folder 1 - Set 441.

The following electrolytic capacitor replacement has been added.

REPLACEMENT DATA FOR SPRAGUE ELECTROLYTIC CAPACITORS

The Sprague replacement part number for C2A, B, C is TVLS-3574.3*.

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 8 IN SET 441

LAFAYETTE MODEL LA-70

Lafayette Model LA-70 was covered in PHOTOFACT Folder 8 - Set 441.

The following electrolytic capacitor replacement has been added.

REPLACEMENT DATA FOR SPRAGUE ELECTROLYTIC CAPACITORS

The Sprague replacement part number for C4A, B is TVA-1414 / TVA-1414

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 442

MUNTZ MODELS 17PD, 17PS (CH. J)

Muntz Models 17PD, 17PS (Ch. J) were covered in PHOTOFACT Folder 2 Set 442.

The following electrolytic capacitor replacement data has been added.

REPLACEMENT DATA FOR SPRAGUE ELECTROLYTIC CAPACITORS

The Sprague replacement part number for C1A, B, C, D is TVLS-4438.1 *.

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 2 IN SET 441

PHILCO MODELS G-4710L, M, 4720L, M, UG-4710L, M, 4720L, M(CH. 9L38, A, AU, U)

Philco Models G4710L, M, G4720L, M, UG-4710L, M, UG-4720L, M (Ch. 9L38, A, AU, U) were covered in PHOTOFACT Folder 2 - Set 441.

The following electrolytic capacitor replacement data has been added.

REPLACEMENT DATA FOR SPRAGUE ELECTROLYTIC CAPACITORS

The Sprague replacement part number for C2A, B, C, D is TVLS-4605.3*.

The Sprague replacement part number for C3A, B, C is TVLS-4713.5*.

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

PHOTOFACT* Folder with CIRCUITRACE*

MODEL GEN-1120C

TRADE NAME	Airline Models GEN-1120A, GEN-1120B, GEN-1120C
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Illinois
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
RATING	12MA @ 9 Volts DC (No Signal, Min. Volume) 14MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	537 — 1640KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A3..... GENERAL CEMENT #5097, 8727
WALSCO #2515

A4, A5..... GENERAL CEMENT #5004, 5008, 5009
WALSCO#2520

A7..... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2543, 2544

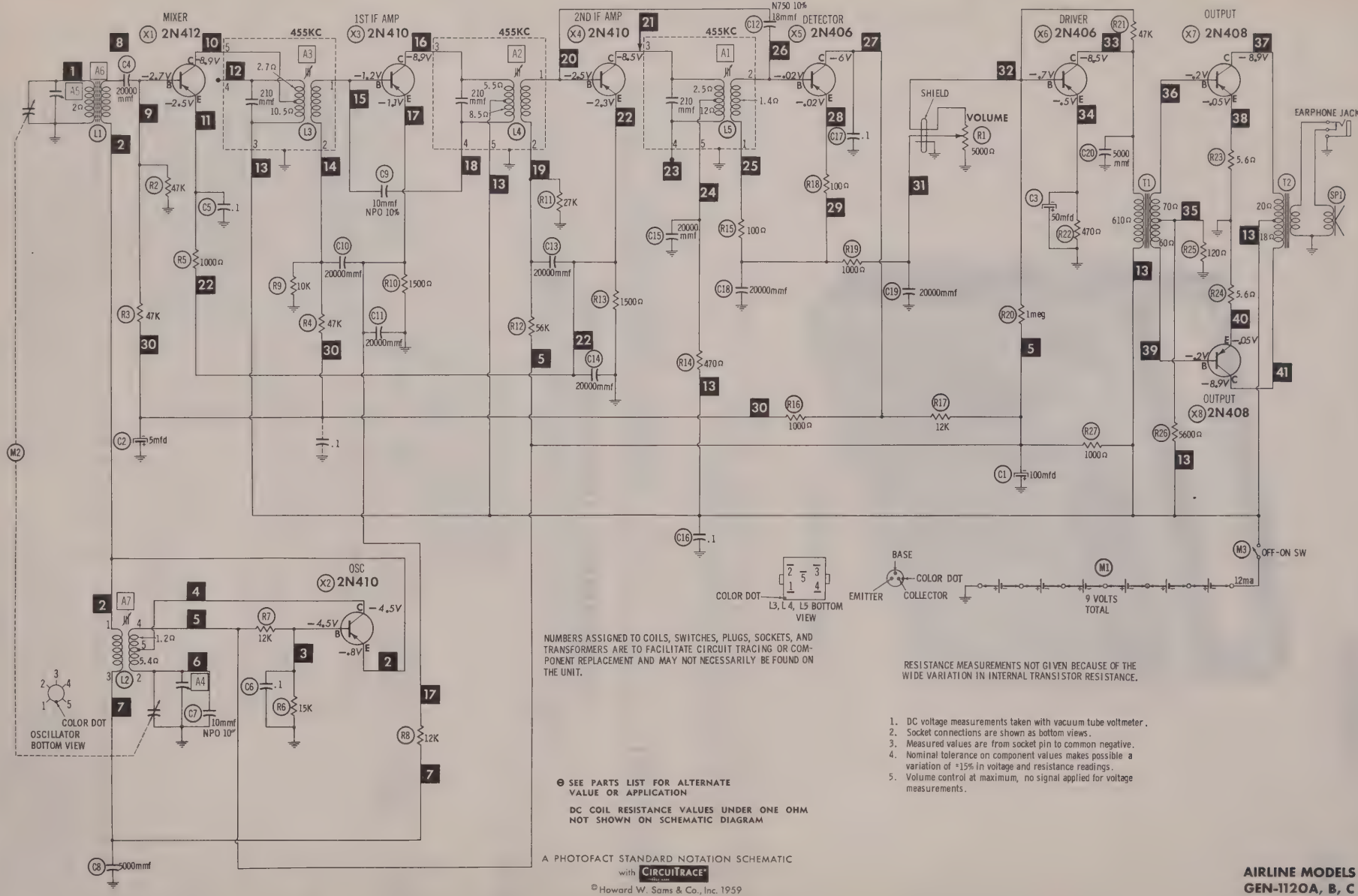
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400∿ Mod.)	Tuning gang fully open	Across coice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1640KC	"	"	A4	"
3.		"	1400KC	1400KC	"	A5	"
4.		"	600KC	600KC	"	A6	Check by using a tuning wand near the antenna and if necessary adjust A6 by moving adjustable turns of antenna for maximum output.
5.		"	537KC	Tuning gang fully closed	"	A7	Adjust for maximum output. Repeat step 2.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JF310

AIRLINE MODELS
GEN-1120A, B, C
SET 458 FOLDER 4



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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AIRLINE MODELS
GEN-1120A, B, C

A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N412	Mixer		2N412	2N486	2N412	PNP
X2	2N410	Oscillator		2N410	2N485	2N410	PNP
X3	2N410	1st IF Amplifier		2N410	2N483	2N410	PNP
X4	2N410	2nd IF Amplifier		2N410	2N482	2N410	PNP
X5	2N406	Detector		2N406	2N362	2N406	PNP
X6	2N406	Driver		2N406	2N362	2N406	PNP
X7	2N408	Output		2N408	2N633	2N408	PNP } Matched
X8	2N408	Output		2N408	2N633	2N408	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	100	10	E3215	PWE10100	EC100-10	TT15X100	ML100-15	TE-1119, 3	
C2	5	10	E3227	PWE10005	EC5-15	TT12X5	ML5-15	TE-1127	
C3	50	3	E3226	PWE3050	EC50-3	TT6X50	ML50-3	TE-1058	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	20000			E3348	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C5	.1	100		E3345	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C6	.1	100		E3345	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C7	10		NPO 10%	E3346	NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10%*	
C8	5000			E3327	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C9	10		NPO 10%	E3346	NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10%*	
C10	20000			E3348	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C11	20000			E3348	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C12	18		N750 10%	E3347		TCN-18	C10Q18U	CN7-418	5TCU-Q18S 10%*	
C13	20000			E3348	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	

CAPACITORS (cont)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C14	20000			E3348	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C15	20000			E3348	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C16	.1	100		E3345	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C17	.1	100		E3345	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C18	20000			E3348	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C19	20000			E3348	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C20	5000			E3327	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	E-2531					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		AIRLINE PART No.	NOTES
	OHMS	WATT		
R2	47K			
R3	47K			
R4	47K			
R5	1000Ω			
R6	15K			
R7	12K			
R8	12K			
*R9	10K			
R10	1500Ω			
R11	27K			
R12	56K			
R13	1500Ω			
R14	470Ω			

ITEM No.	RATING		AIRLINE PART No.	NOTES
	OHMS	WATT		
R15	100Ω			
R16	1000Ω			
R17	12K			
R18	100Ω			
R19	1000Ω			
R20	1meg			
R21	47K			
R22	470Ω			
R23	5.6Ω		E2016	
R24	5.6Ω		E2016	
R25	120Ω			
R26	5600Ω			
R27	1000Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AIRLINE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	E6028						
L2	Osc. Coil	E6138						
L3	1st IF Trans.	E6221						
L4	2nd IF Trans.	E6222						
L5	3rd IF Trans.	E6223						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5	1	E1122					TY-51X①	① Bend Tabs Down

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	AIRLINE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	300Ω CT	3-4Ω	E1123	TR-113①			TA-41 ①	TR-113①	TY-57X ①	① Bend Tabs Down

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	E1037	46A07 ①	① Enlarge Mounting Holes

BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	62-63 ①		2R ①		950①		M-13M①	① 6 Used

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	Tuning Cap	E3524	2 Gang; Ant. 22–243mmf, Osc. 11–107mmf
M3	Switch	E129	Power On-Off (DPDT, Slide Type)
	Printed Board	E5628	

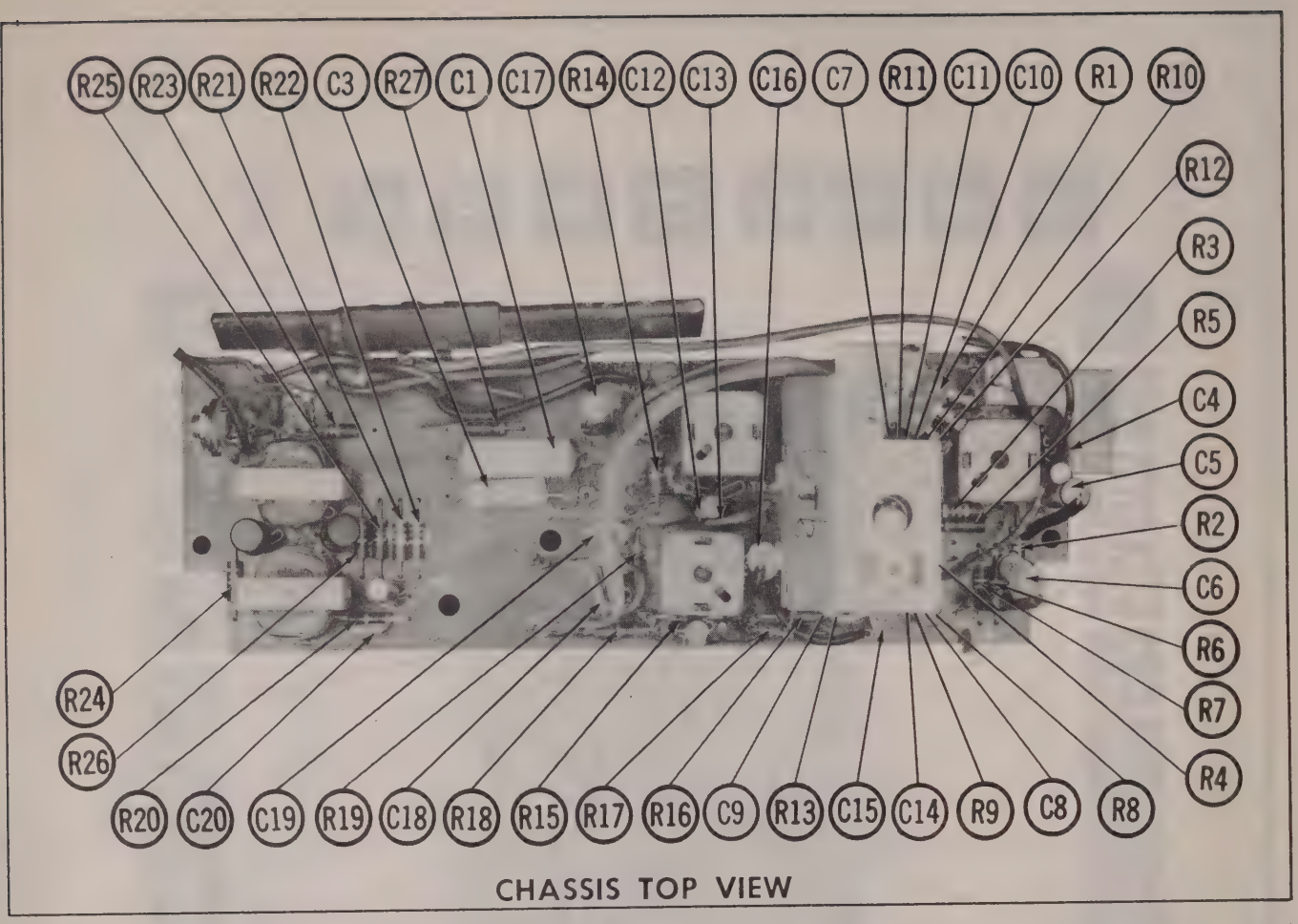
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

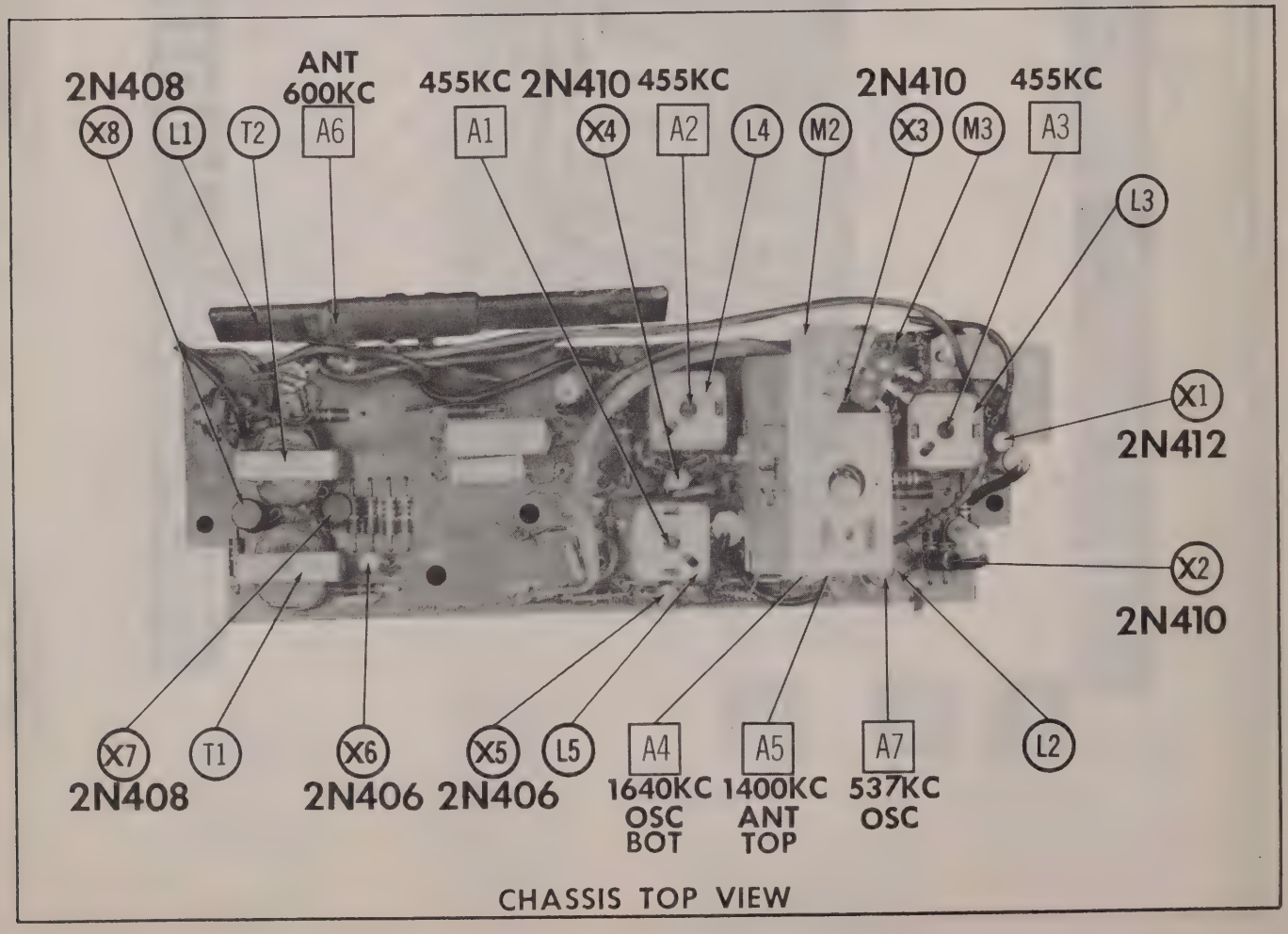
NAME	PART NO.	DESCRIPTION
Knob	E5086	Tuning
Knob	E5083	Volume
Cabinet	E7046-3	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

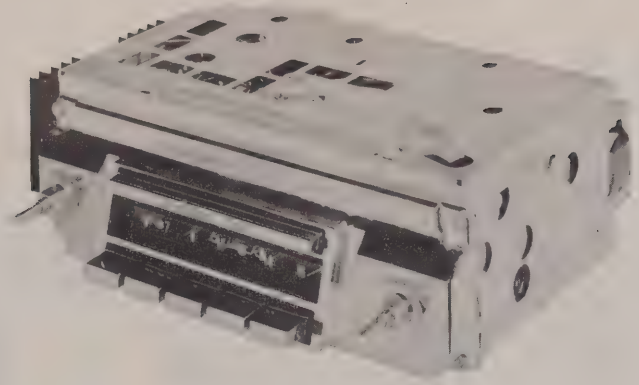


CHASSIS TOP VIEW



CHASSIS TOP VIEW

PHOTOFACT* Folder with CIRCUITRACE*



BUICK MODEL
981969

TRADE NAME	Buick Model 981969 (For 1959 Buick Automobiles)
MANUFACTURER	Delco Radio Div., G. M. Corp., Kokomo, Indiana
TYPE SET	Battery Operated 5 Tube Custom Built AM Automobile Receiver With Transistorized Output
POWER SUPPLY	12 Volt Storage Battery — RATING 2.8 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	550 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

To preset to High frequency end, put a .070" feeler gauge in slot against high frequency stop. Depress station selector bar and allow the treadle bar arm to run against the feeler gauge. Turn the radio off then back on.

Suggested alignment tools:

A1, A2, A3, A4..... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2543, 2544

A5, A9, A10..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

A6, A7, A8..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of Converter. Low side to chassis.	262KC (400~ Mod.)	High Freq. stop	DC probe to point (A). Common to chassis.	A1	Adjust for MINIMUM deflection.
2.	"	"	"	"	"	A2, A3, A4	Adjust for maximum deflection.
	Check setting of Oscillator core (A5). Rear of core should be 1 5/8" from mounting end of coil form.						
3.	82mmf	High side to antenna receptacle. Low side to chassis.	1615KC	"	"	A6, A7, A8	Adjust for maximum deflection.
4.	"	"	600KC	600KC Signal	"	A9, A10	Adjust for maximum deflection.
5.	"	"	1615KC	1615KC Signal	"	A7, A8	"
6.	"	"	1100KC	1100KC Signal	"		Adjust pointer adjustment until pointer coincides with 1100 on dial.
7.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A8 for maximum output.						

PUSHBUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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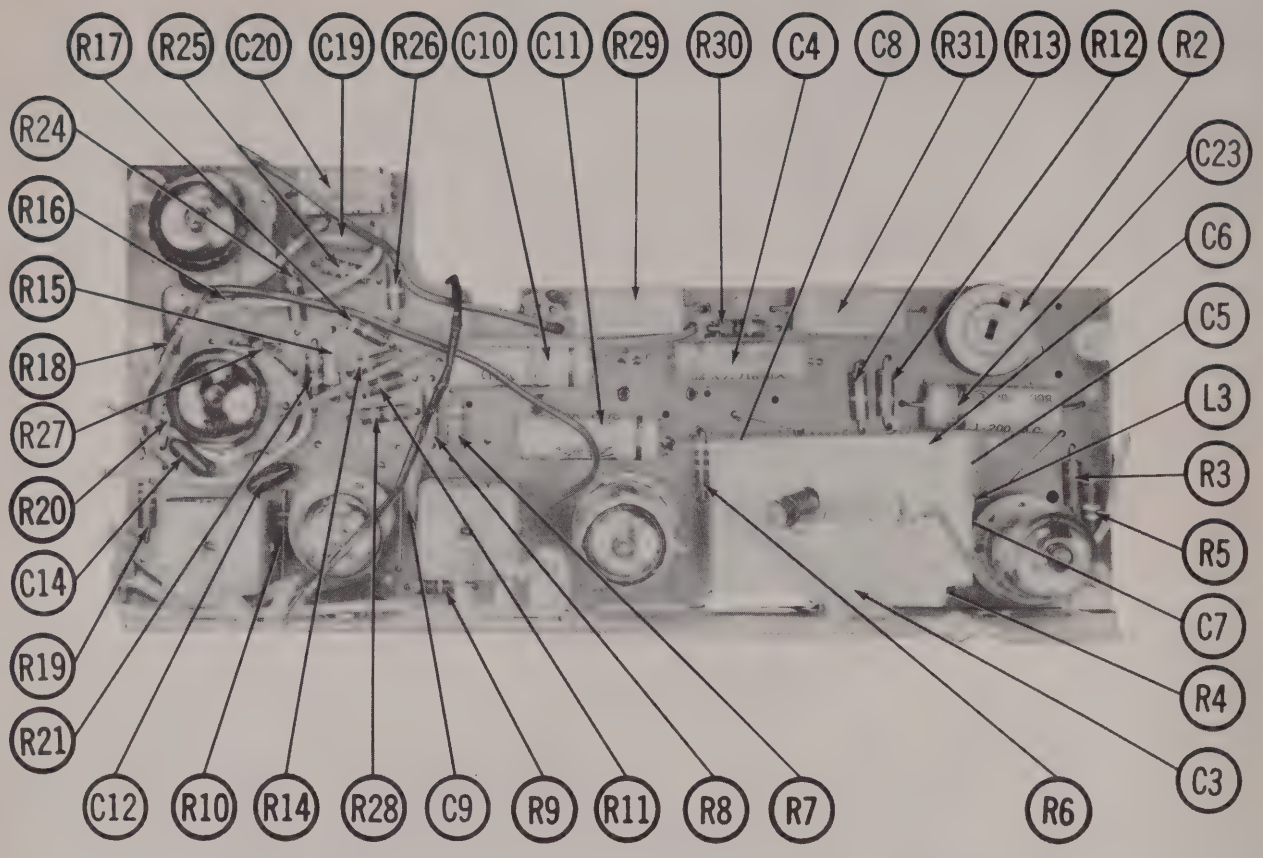
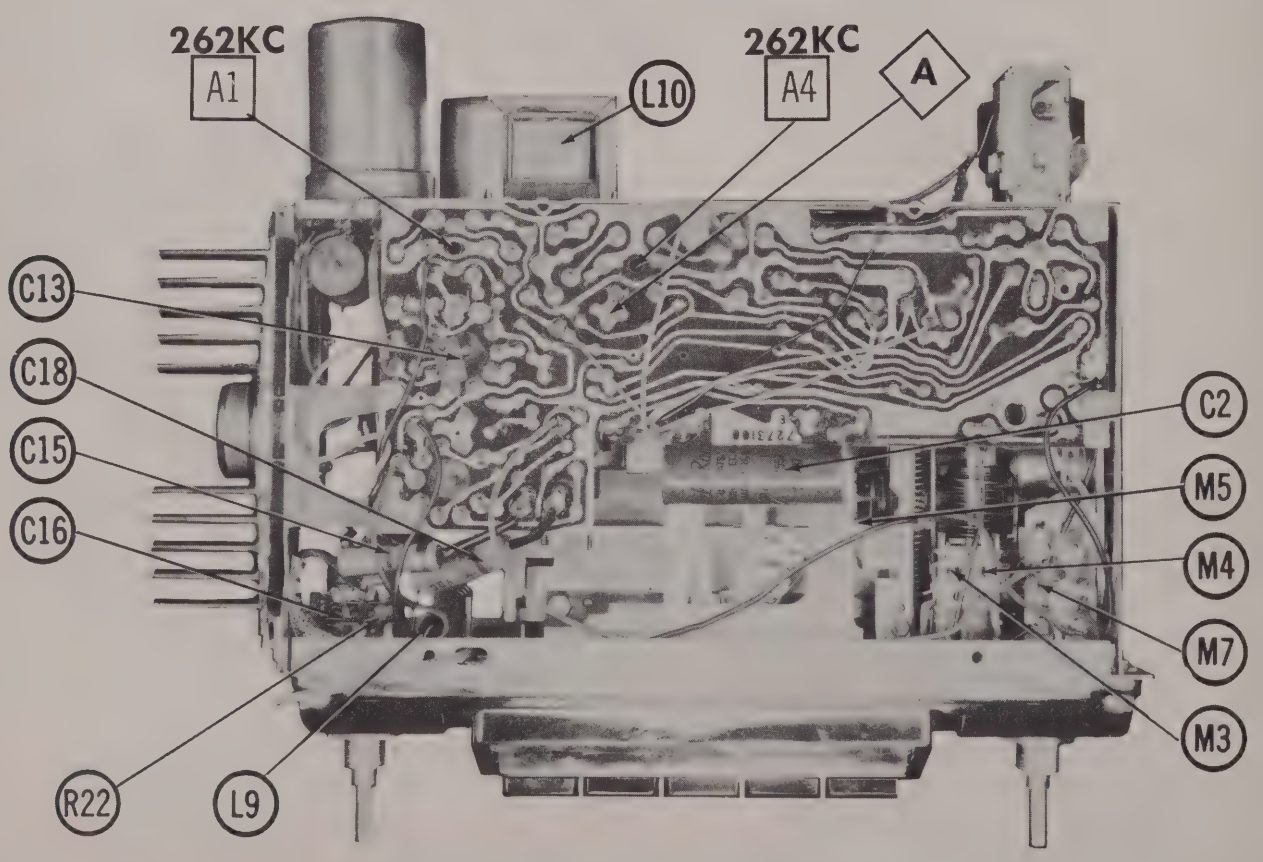


PRINTED BOARD — CAPACITOR & RESISTOR IDENT.



CHASSIS — BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆	GENERAL ELECTRIC ◆		RAYTHEON ◆	SYLVANIA ◆	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12DZ6	V4	Det.-AVC-Driver	12DV8
V2	Converter	12AD6	V5	Trigger-Relay Control	12AL8
V3	IF Amplifier	12EK6			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	DS-501	Output					PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	DELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲750	16	7273728	AFH4-20-75		WP401.5		TVLS-4204*	①
B	■ 600	16							
C	▲350	16							
D	4	16VAC							
C2	1000	1	7271557	PRS6V1000	BR1000-6	TC-110	TD-1000-6	TVA-1104	

① Some versions may use 750mfd@16V, 600mfd@16V, 350mfd@16V, 4mfd@32V Part #7273847.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

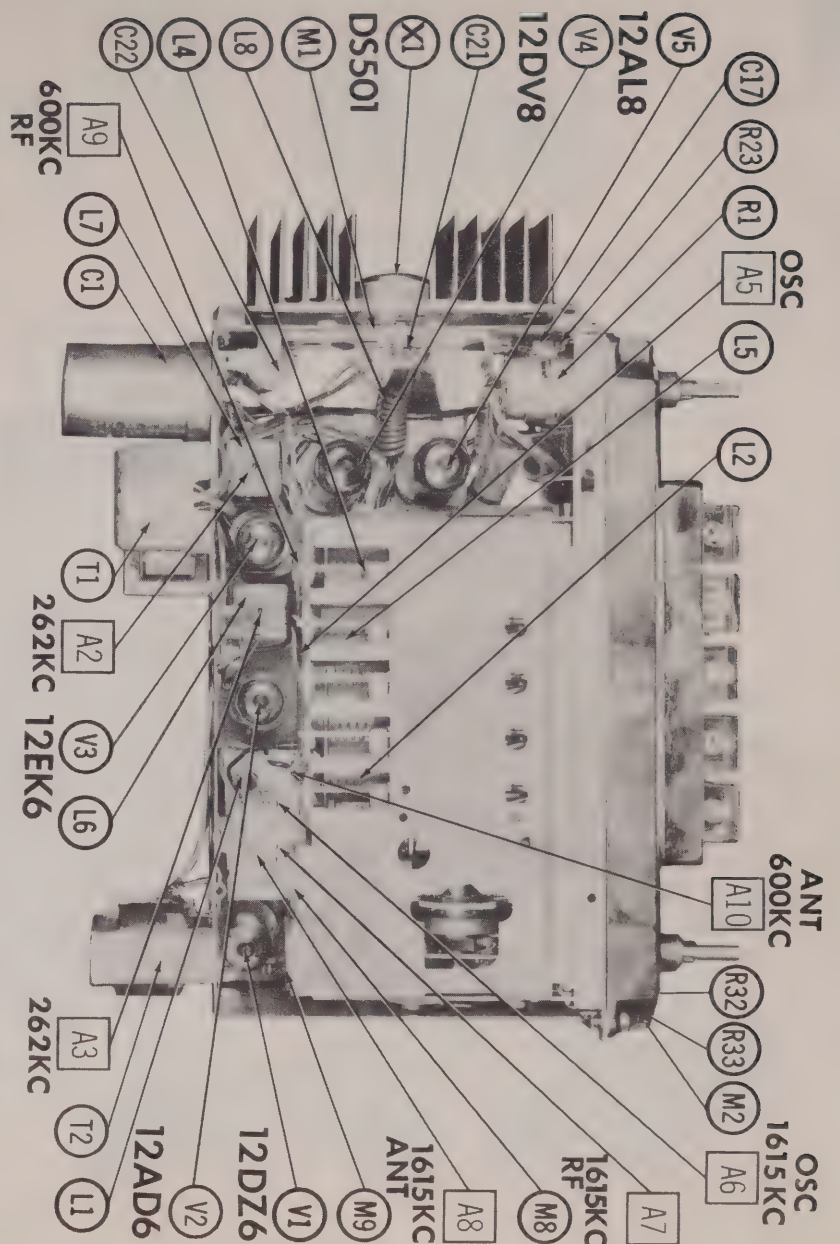
ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	DELCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3				7266240						
C4	.047	200		7271670	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C5	68			6369	DI 68	DD-680	L10Q68	UC-5468	5GA-Q68	
C6A										
B				7273693						
C7	39			6366	DI 39	DD-390	L10Q69	UC-5439	5GA-Q39	
C8	220		5%	7273511	1469-00022	DTZ-220	22R5T22	JL-322	MS-322	
C9	2000			6352	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C10	.1	200		6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C11	.1	200		6690	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C12	100		5%	1219498	1469-0001	DTZ-100	22R5T1	MCE235	MS-31	
C13	100		5%	1219498	1469-0001	DTZ-100	22R5T1	MCE235	MS-31	
C14	47		5%	6367	1469-000047	DTZ-47	22R5Q47	CNO-447	MS-447	
C15	.01	400		6633	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C16	220			6375	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C17	33				1468-000033	DD-330	22R5Q33	UC-5433	1FM-433	
C18	.22	100		7271555	P288N-22		CUB2P22	GEM-2022	2TM-P22	
C19	100		10%	6371	DI 100	DTZ-100	L10T1	ZT-531	MS-31	
C20	.047	100		7272519	P288N-047	DF-503	CUB2S47	GEM-4047	2TM-S47	
C21A	220		)	6375	(BPD-00022	DD-221	L10T22	B-332	5GA-T22	
B	220				BPD-00022	DD-221	L10T22	B-332	5GA-T22	
C22	.47	100		6692	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C23	.1	200		6690	P288N-1	DF-104	CUB2P1	GEM-411	2TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	DELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	4meg&30K	½	7272797					Tone Note 1
B	5meg							Volume, Tap@2meg
C	Switch							Off/On
R2	110Ω	1(WW)	7273776				PFL-100	Bias

Note 1. Element open at 50% rotation. 30K left section, 4meg right section.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	DELCO PART No.	NOTES
R3	2.2meg		1239	
R4	10K		1137	
R5	150K		1225	
R6	47K		1219	
R7	680K		1233	
R8	1.5meg		1237	
R9	150Ω		1115	
R10	3300Ω 5%		1220173	
R11	3.3meg		1241	
R12	1.5meg		1237	
R13	1.5meg		1237	
R14	3.3meg		1241	
R15	4.7meg5%		7271456	
R16	1meg		1235	
R17	3.9meg5%		7271627	
R18	560Ω		1122	
R19	47K		1219	
R20	680K		1233	
R21	18Ω		1104	
R22	2200Ω			Note 1
R23	1.5meg		1237	
R24	27Ω 5%		7273769	
R25	680K		1233	
R26	2.2meg		1239	
R27	15Ω		1103	
R28	56Ω		1110	
R29	.47Ω	2	7270608	Fuse Type
R30	10Ω		1101	
R31	100Ω	5	7271525	
R32	33K		1217	
R33	1800Ω		1128	

Note 1. Some versions may use 3300Ω in this application (Part #1131).

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA DELCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Ant. Coil	7255738	19-1004	19-1004	BC-565	4610		
L2	Ant. Tuning Coil	1221138						
L3	RF Choke	7269684						1.8MH
L4	RF Tuning Coil	1221138						
L5	Osc. Tuning Coil	1221151						
L6	Input IF	1221257	16-6756	16-6756	BC-344	13-PH1		
L7	Output IF	1221253						
L8	RF Choke	1217846						1.4uh
L9	"A" Lead Choke	1217846						1.4uh

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L10	.8A	.7Ω	.011 HY	7273850				TC-2		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	13	1	7272822						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	REPLACEMENT DATA DELCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	9Ω Tap ⓐ 3-4Ω	7273626				TA-50①			① Use Original Channel Frame

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA DELCO PART No.	QUAM PART No.	NOTES
SP1	4"x 10"	PM	3-4Ω	7273342	46A15	

MISCELLANEOUS

ITEM No.	PART NAME	DELCO PART No.	NOTES
M1	Spark Plate	1221054	
M2	Switch	7272778	Sensitivity
M3	Switch	7268030	Power Solenoid
M4	Switch	7268030	Treadle Solenoid
M5	Switch	7273705	Station Selector
M6	Switch	7273704	Foot Control
M7	Relay	7270545	
M8	Solenoid & Plunger	1221160	Power
M9	Solenoid & Plunger	1221161	Treadle
	Printed Board	7273100	

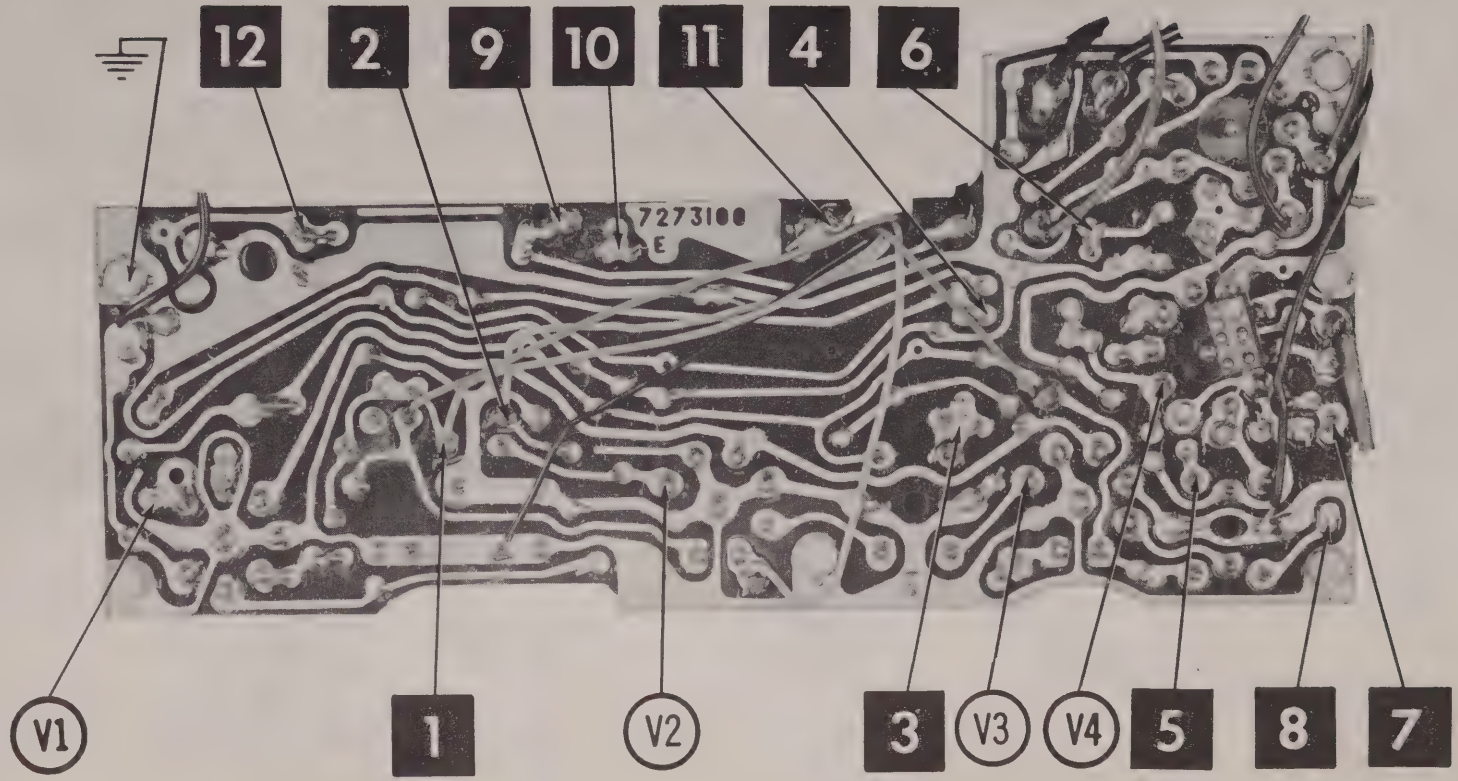
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	1186745	Control
Knob	1186767	Tone
Knob	1186768	Sensitivity
Pushbutton Ass'y.	1221280	Includes Pushbuttons, Front Bearing Plate & Slides
Pushbutton	7272805	Pushbutton #1
Pushbutton	7272806	Pushbutton #2
Pushbutton	7272807	Pushbutton #3
Pushbutton	7272808	Pushbutton #4
Pushbutton	7272809	Pushbutton #5
Pointer	7272734	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661



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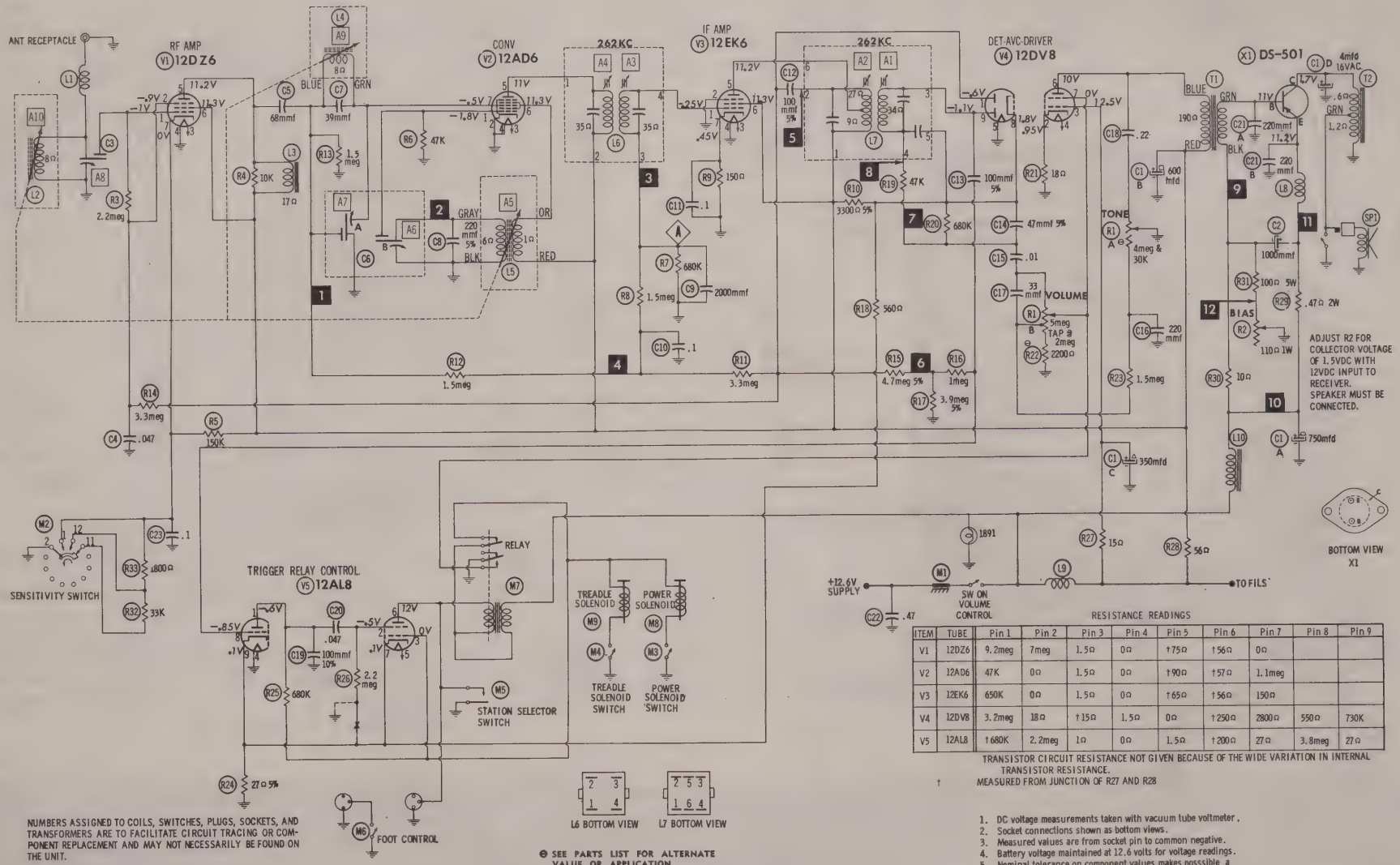
PRINTED BOARD
MODEL 981969
BUICK

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

FOLDER 5



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12DZ6	9.2meg	7meg	1.5Ω	0Ω	†75Ω	†56Ω	0Ω		
V2	12AD6	47K	0Ω	1.5Ω	0Ω	†90Ω	†57Ω	1.1meg		
V3	12EK6	650K	0Ω	1.5Ω	0Ω	†65Ω	†56Ω	150Ω		
V4	12DV8	3.2meg	18Ω	†15Ω	1.5Ω	0Ω	†250Ω	2800Ω	550Ω	730K
V5	12AL8	†680K	2.2meg	1Ω	0Ω	1.5Ω	†200Ω	27Ω	3.8meg	27Ω

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM JUNCTION OF R27 AND R28

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15%in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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BUICK MODEL 981969

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER

CONTINENTAL MODEL 160

CONTINENTAL MODEL 160

CONTINENTAL MODEL 160

TRADE NAME	Continental Model 160
IMPORTER	Continental Merchandise Co., Inc., 236 Fifth Ave., New York 1, N. Y.
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	530-1650KC
RATING	7.1MA @ 9 Volts DC (No Signal, Min. Volume) 10MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools : A4, A5 .....GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output
2.		"	1650KC	"	"	A4	Adjust for maximum output.
3.		"	600KC	600KC	"	A5	"
4.		"	1400KC	1400KC	"	A6	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JF238

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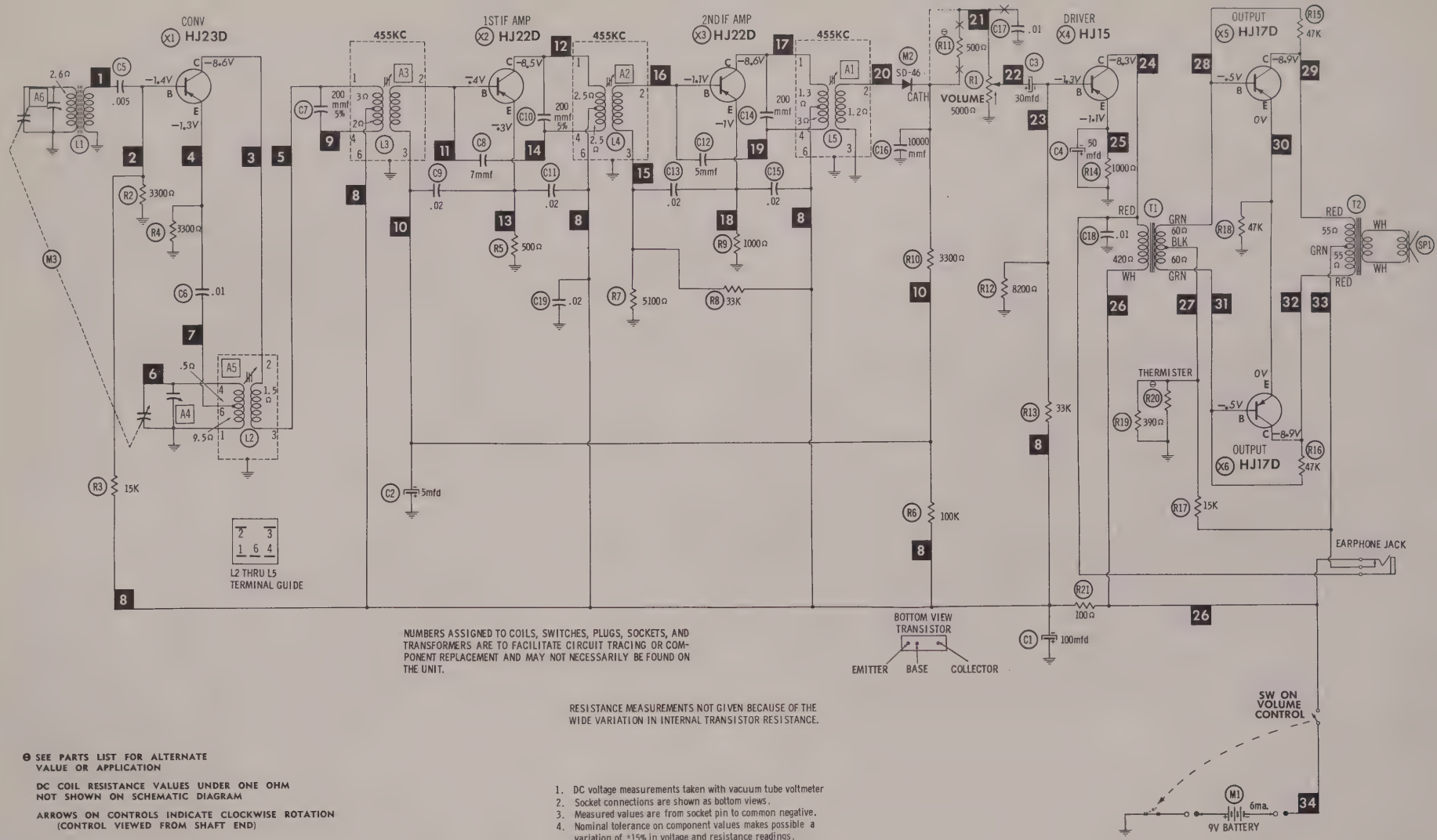

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

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with CIRCUITRACE

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CONTINENTAL
MODEL 160

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	HJ23D	Converter		2N411	2N486	2N411	PNP
X2	HJ22D	1st IF Amplifier		2N409	2N483	2N409	PNP
X3	HJ22D	2nd IF Amplifier		2N409	2N483	2N409	PNP
X4	HJ15	Driver		2N405	2N362	2N405	PNP
X5	HJ17D	Output		2N407	2N632	2N407	PNP Matched Pair
X6	HJ17D	Output		2N407	2N632	2N407	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CONTINENTAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	100	10		PWE10100	NLW100-10	TT15X100	ML100-15	TE-1119.3	
C2	5	3		XPP-3005	NLW5-6	TT6X5	ML5-6	TE-1052.2	
C3	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	50	6		XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	CONTINENTAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	.005	50			C-80V502AM	DM-502	H-05D5	TA-250	TG-D50	
C6	.01	50			C-80V103AM	DM-103	H-05S1	TA-110	TG-S10	
C7	200		5%						5GA-T2S 5% *	
C8	7								5GA-V7S *	
C9	.02	50			C-80V203AM	DDM-203	H-05S2	TA-120	TG-S20	
C10	200		5%						5GA-T2S 5% *	
C11	.02	50			C-80V203AM	DDM-203	H-05S2	TA-120	TG-S20	
C12	5				NPO-SI 5	D6-050	C10V5C		5GA-V5	
C13	.02	50			C-80V203AM	DDM-203	H-05S2	TA-120	TG-S20	
C14	200		5%						5GA-T2S 5% *	
C15	.02	50			C-80V203AM	DDM-203	H-05S2	TA-120	TG-S20	
C16	10000				C-80V103AM	DM-103	H-05S1	TA-110	TG-S10	
C17	.01	50			C-80V103AM	DM-103	H-05S1	TA-110	TG-S10	①
C18	.01	50			C-80V103AM	DM-103	H-05S1	TA-110	TG-S10	
C19	.02	50			C-80V203AM	DDM-203	H-05S2	TA-120	TG-S20	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CONTINENTAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	½						Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		CONTINENTAL PART No.	NOTES
	OHMS	WATT		
R2	3300Ω			
R3	15K			
R4	3300Ω			
R5	500Ω			
R6	100K			
R7	5100Ω			
R8	33K			
R9	1000Ω			
R10	3300Ω			
R11	500Ω			Note 1

Note 1. Not used in some versions.

ITEM No.	RATING		CONTINENTAL PART No.	NOTES
	OHMS	WATT		
R12	8200Ω			
R13	33K			
R14	1000Ω			
R15	47K			
R16	47K			
R17	15K			
R18	47K			
R19	390Ω			
R20				Note 2
R21	100Ω			

Note 2. Temperature compensating.

PRINTED BOARD

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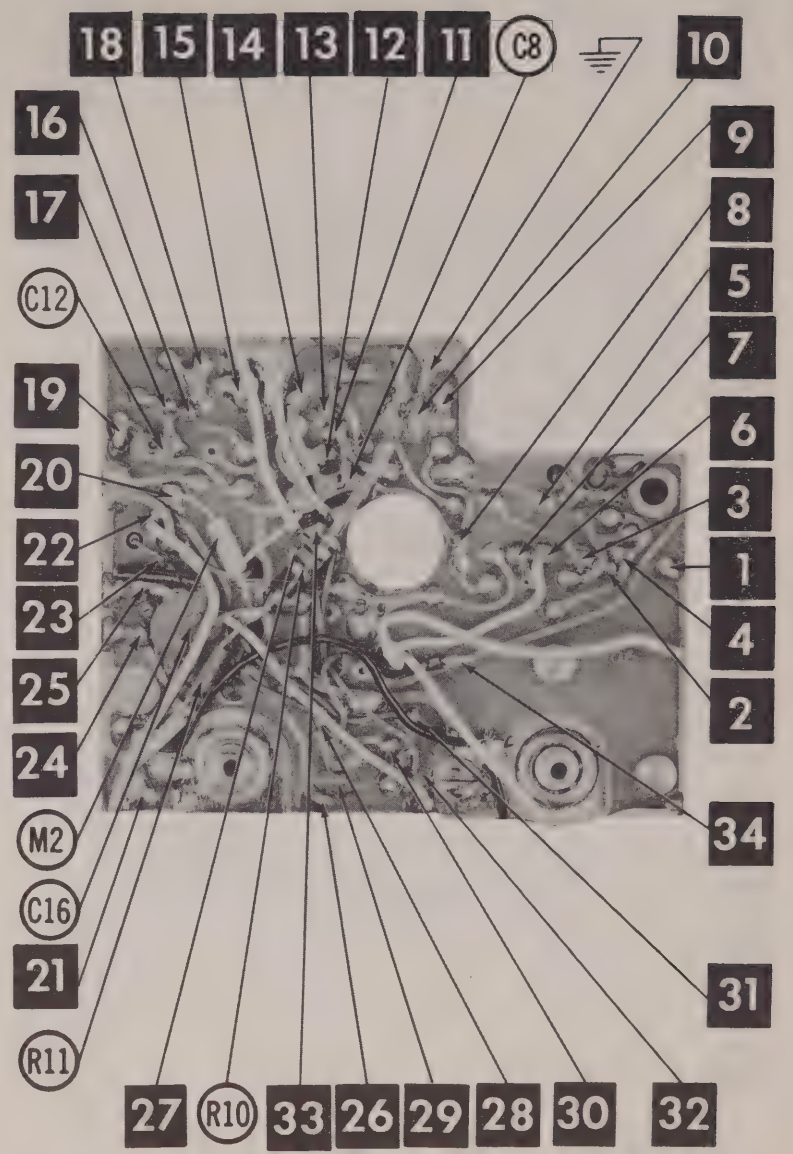


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		CONTINENTAL PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc. Coil							
L3	1st IF Trans.							
L4	2nd IF Trans.							
L5	3rd IF Trans.							

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CONTINENTAL PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1	TRT-3						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CONTINENTAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	800Ω CT	8-10Ω	TRT-7							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CONTINENTAL PART No.	QUAM PART No.	
SP1	2½"	PM	8-10Ω		25A07Z10.6	

BATTERIES

ITEM No.	VOLTAGE	CONTINENTAL PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1				P6		226		M1600	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CONTINENTAL PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD-46		1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	CONTINENTAL PART No.	NOTES
M3	Tuning Cap.		2 Gang (Ant. 11-167mmf)

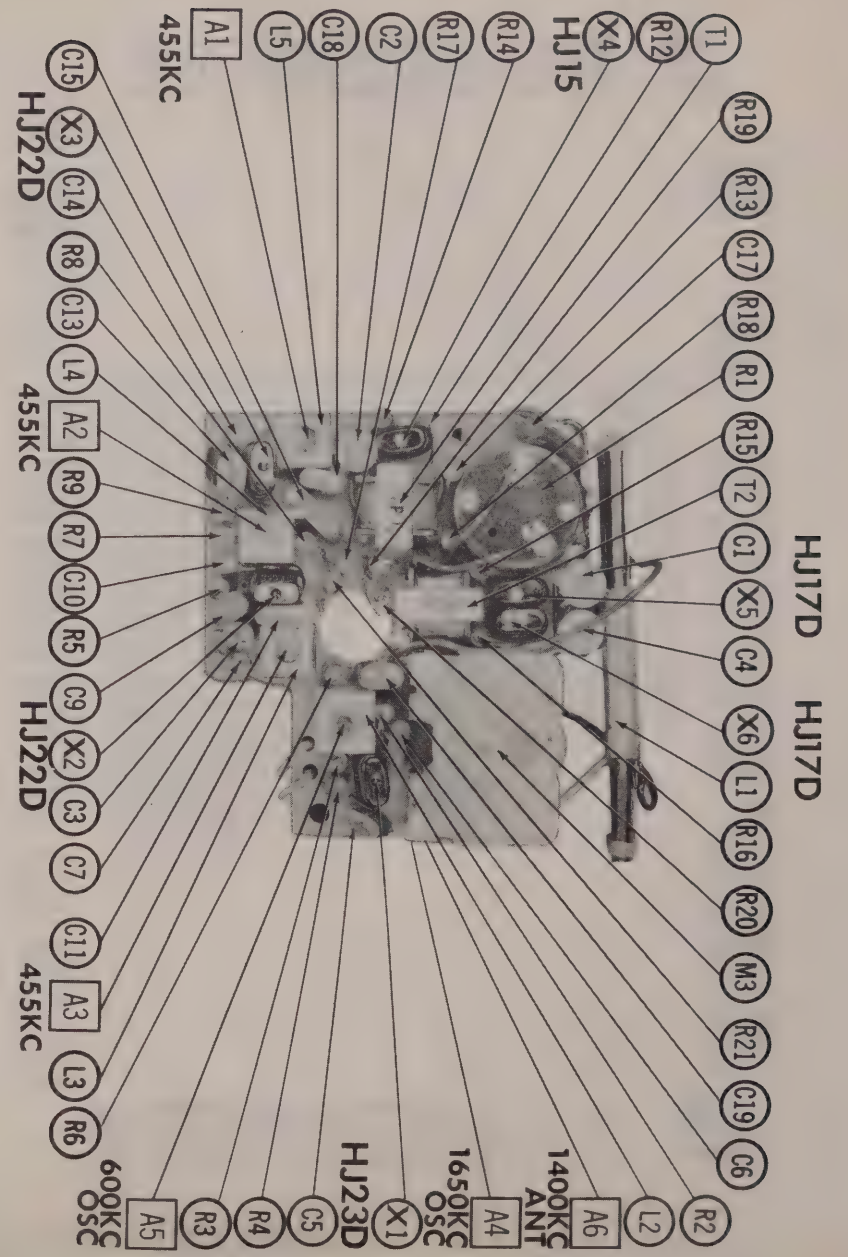
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT* Folder

EIA MEMBER

CROWN MODEL PR-535C

CROWN MODEL PR-535C

CROWN MODEL PR-535C

TRADE NAME	Crown Model PR-535C
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.
TYPE SET	Battery Operated 4 Tube, Portable AM Receiver
POWER SUPPLY	1.5 Volts DC "A" Supply & 67.5 Volts DC "B" Supply
RATING	250MA @ 1.5 Volts DC & 9MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	525-1650KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3 .... GENERAL CEMENT #8271, 8273, 8275, 8276, 8721, 8722, 9150, 9298, 5003
WALSCO #2516, 2519
A4 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519
A5, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	525KC	Tuning gang fully closed	"	A4	"
3.		"	1650KC	Tuning gang fully open	"	A5, A6	"
4.		"	650KC	650KC	"	A7	"

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PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	1R5	V3	Det.-AVC-AF Amp.	1S5
V2	IF Amplifier	1T4	V4	Output	3S4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	CROWN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	10	130		SRE150V10	BBR10-150	TC42	TD-10-150	TVA-1406	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	CROWN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2A	10000				C80V103AM	DM-103	BYA10S1	BT-110	5HK-S1	
B	250				DI-250	DD-251	L10T25	UC-5325	5GA-T25	
C	250				DI-250	DD-251	L10T25	UC-5325	5GA-T25	
C3	100				SI 100	DD-101	L10T1	UC-531	5GA-T1	
C4A	5000				C80V502AM	DM-502	BYA10D5	BT-250	5HK-D5	
B	5000				C80V502AM	DM-502	BYA10D5	BT-250	5HK-D5	
C	1000				C80V102AM	DM-102	BYA10D1M	UC-521	5HK-D1	
C5	250				1468-00025	D6-251	22R5T25	MC240	1FM-325	
C6	.001	400			P485N-001	D6-102	STM4D1	UC-521	5BF-D10	
C7	.005	400			P485N-005	D6-502	STM4S47	UC-525	5BF-D47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROWN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	1/4		B16-220				Volume & Switch

RESISTORS

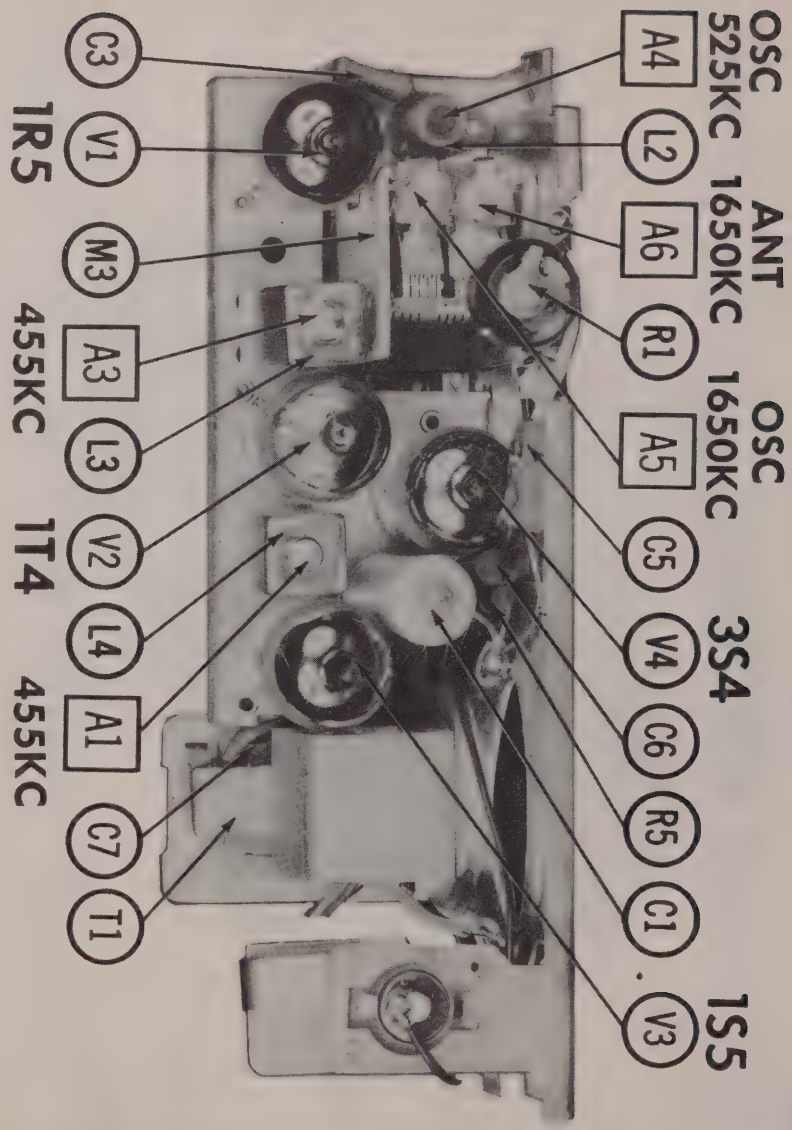
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		CROWN PART No.	NOTES
	OHMS	WATT		
R2	100K			
R3	15K			
R4	2.2meg			
R5	10meg			
R6	220K			

ITEM No.	RATING		CROWN PART No.	NOTES
	OHMS	WATT		
R7	1meg			
R8	1meg			
R9	2.2meg			
R10	820Ω			
R11	470K			Note 1

Note 1. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		CROWN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1 L2 L3 L4	Loopstick Osc. Coil Input IF Trans. Output IF Trans.							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CROWN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4600Ω	12Ω								

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CROWN PART No.	QUAM PART No.	
SP1	2 1/4"	PM	11-12Ω			

BATTERIES

ITEM No.	VOLTAGE	CROWN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1 M2	67.5V 1.5V		230	UX45	P100	416	M-13R	M217	

MISCELLANEOUS

ITEM No.	PART NAME	CROWN PART No.	NOTES
M3	Tuning Cap.		2 Gang

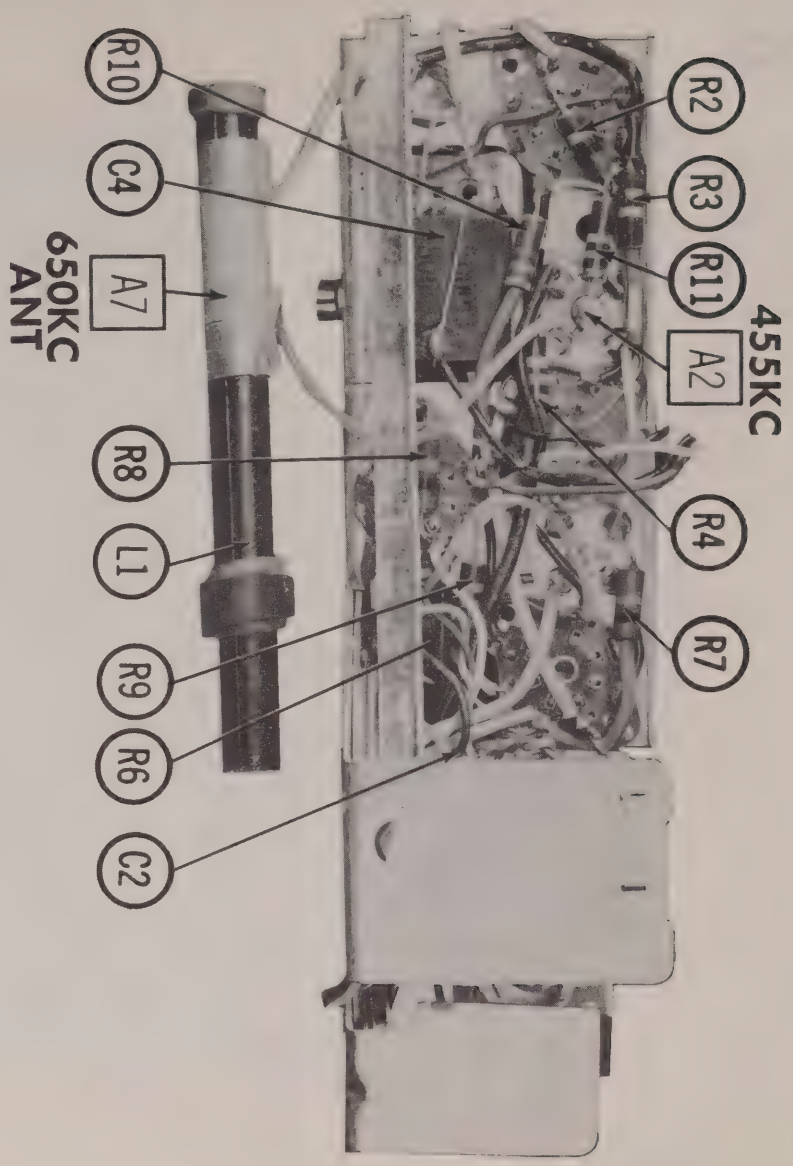
CABINETS & CABINET PARTS

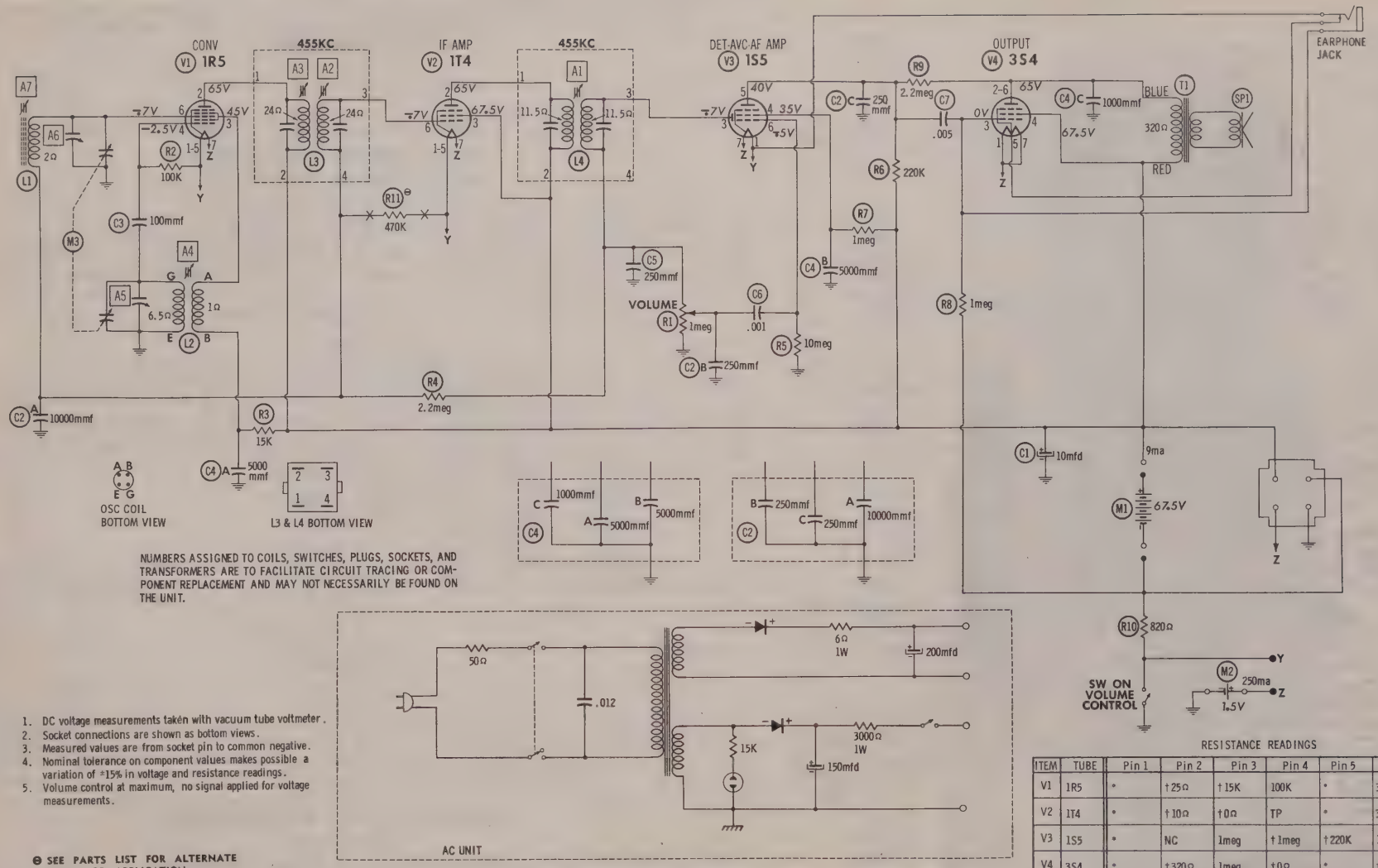
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS BOTTOM VIEW





NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	*	†25Ω	†15K	100K	*	3.2meg	*
V2	1T4	*	†10Ω	†0Ω	TP	*	3.2meg	*
V3	1S5	*	NC	1meg	†1meg	†220K	10meg	*
V4	3S4	*	†320Ω	.1meg	†0Ω	*	†320Ω	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM POSITIVE TERMINAL OF C1.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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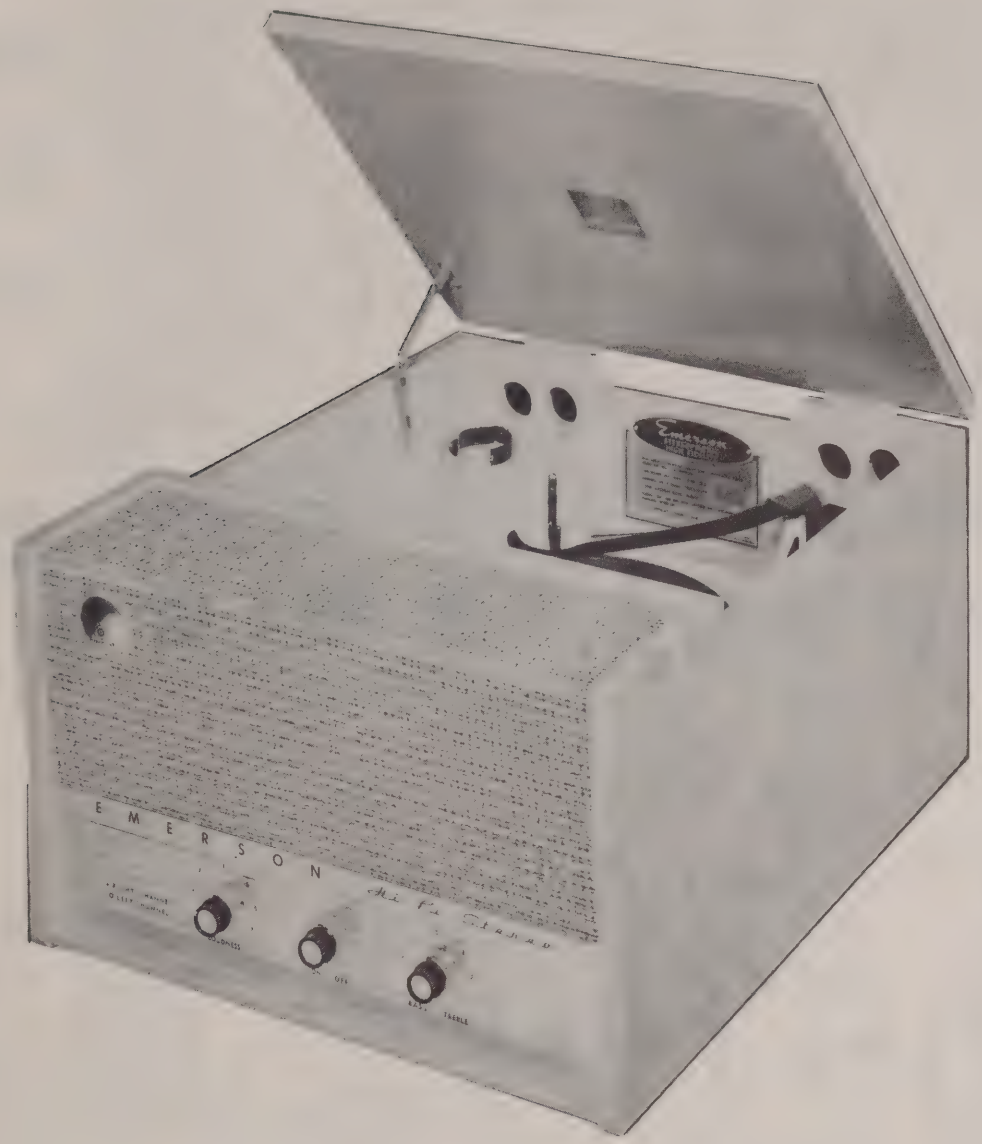
CROWN MODEL PR-535C

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER

EMERSON MODEL 898B (Ch. 120456B)

EMERSON MODEL
898B (Ch. 120456B)



EMERSON MODEL
898B (Ch. 120456B)

TRADE NAME	Emerson Model 898B (Ch. 120456B)
MANUFACTURER	Emerson Radio & Phono Corp., 524 W. 23rd St., New York 11, N. Y.
TYPE SET	AC Operated 3 Tube Portable Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 34 Watts, .358 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #819128 — SEE SIMILAR V-M 1200A — PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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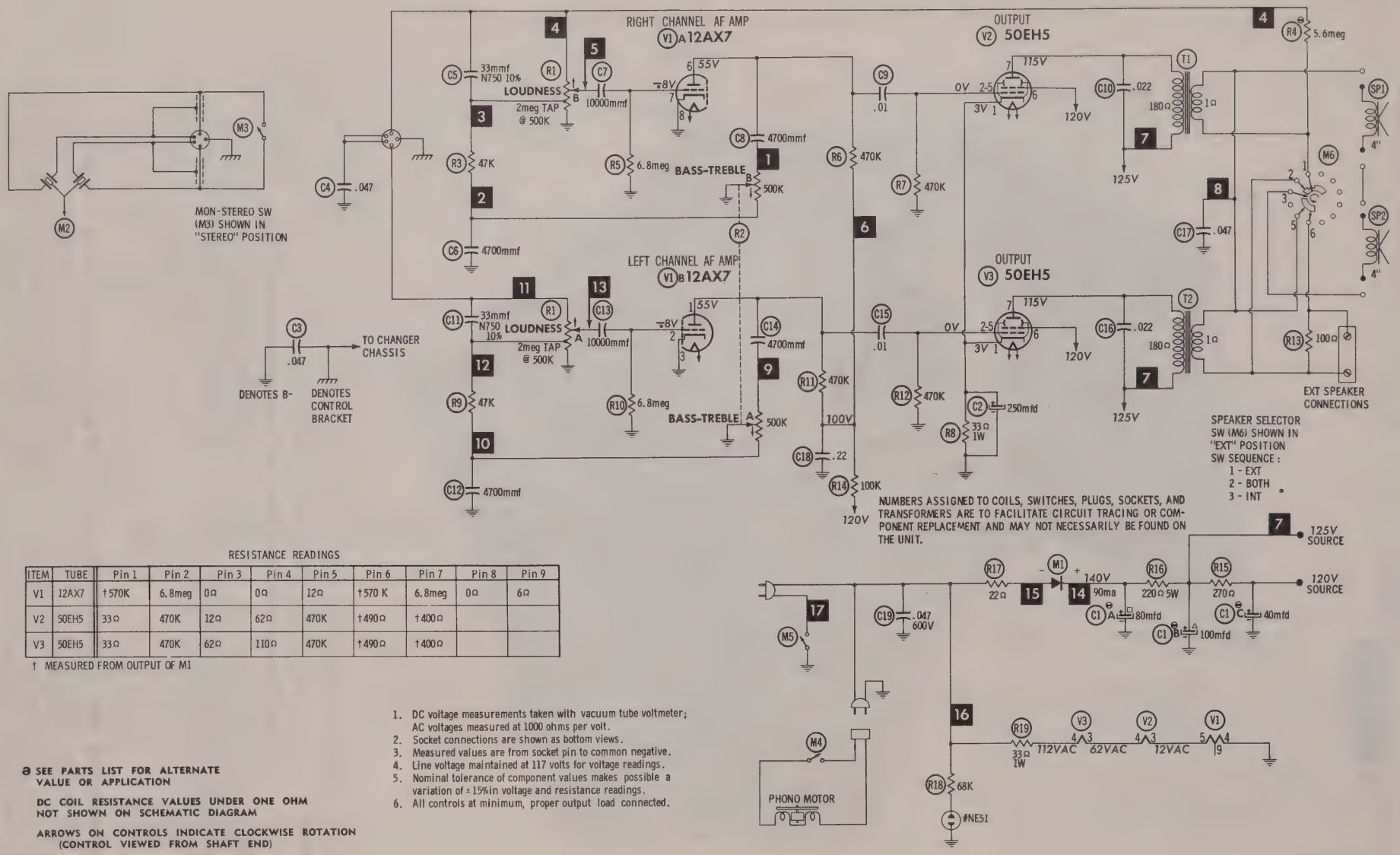

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†570K	6.8meg	0Ω	0Ω	12Ω	†570 K	6.8meg	0Ω	6Ω
V2	50EH5	33Ω	470K	12Ω	62Ω	470K	†490Ω	†400Ω		
V3	50EH5	33Ω	470K	62Ω	110Ω	470K	†490Ω	†400Ω		

† MEASURED FROM OUTPUT OF M1

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

8 SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE™

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EMERSON MODEL 989B (Ch. 120456B)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Right Channel AF Amp. - Left Channel AF Amp.	12AX7	V2 V3	Right Channel Output Left Channel Output	50EH5 50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■80	160						PCLS-3454. 5*	
B	▲100	160							①
C	40	150							
C2	250	15	925461	PRS15V250	BR2501	TT15X250	TD-250-15	TVA-1161	

① Some versions may use 80—100—40mfd@160V in this application (Part #925462).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	.047	400		923554	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C4	.047	400		923554	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C5	33		N750 10%	928894	N750-DI 33	DTN-33	C10Q33U	CN7-433	5TCU-Q33S 10%*	
C6	4700			928922	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C7	10000			928924	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C8	4700			928922	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C9	.01	400		923514	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C10	.022	400		924524P	P488N-022		CUB4S22	GEM-4122	4TM-S22	
C11	33		N750 10%	928894	N750-DI 33	DTN-33	C10Q33U	CN7-433	5TCU-Q33S 10%*	
C12	4700			928922	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C13	10000			928924	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C14	4700			928922	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C15	.01	400		923514	P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C16	.022	400		924524P	P488N-022		CUB4S22	GEM-4122	4TM-S22	
C17	.047	400		923554	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C18	.22	400		923325	P488N-22		CUB4P22	GEM-4022	4TM-P22	
C19	.047	600		922208	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg *	½	390585					Loudness, Left Channel
B	2meg *	½						Loudness, Right Channel
R2A	500K	½	390586	B-59	AD47-500K-S	Q11-133	† UE1295	Bass/ Treble, Left Channel
B	500K	½		SR-59	Not Req.	M11-133		Bass/ Treble, Right Channel
C	Shaft			Not Req.	FS-3	Not Req.		

† "STA-LOC" equivalent: FA55L, RU55L, CS3500 * Tap @ 500K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	EMERSON PART No.	NOTES
R3	47K		340892	
R4	5.6meg			Note 1
R5	6.8meg		351412	
R6	470K		341032	
R7	470K		351032	
R8	33Ω	1	370132	
R9	47K		340892	
R10	6.8meg		351412	
R11	470K		341032	

ITEM No.	RATING OHMS	RATING WATT	EMERSON PART No.	NOTES
R12	470K		351032	
R13	100Ω		350252	
R14	100K		350972	
R15	270Ω		340352	
R16	220Ω	5	397135	
R17	22Ω		397133	Fuse Type
R18	68K		340932	
R19	33Ω	1	370132	

Note 1. Some versions may use 22meg in this application (Part #341534).

PRINTED BOARD

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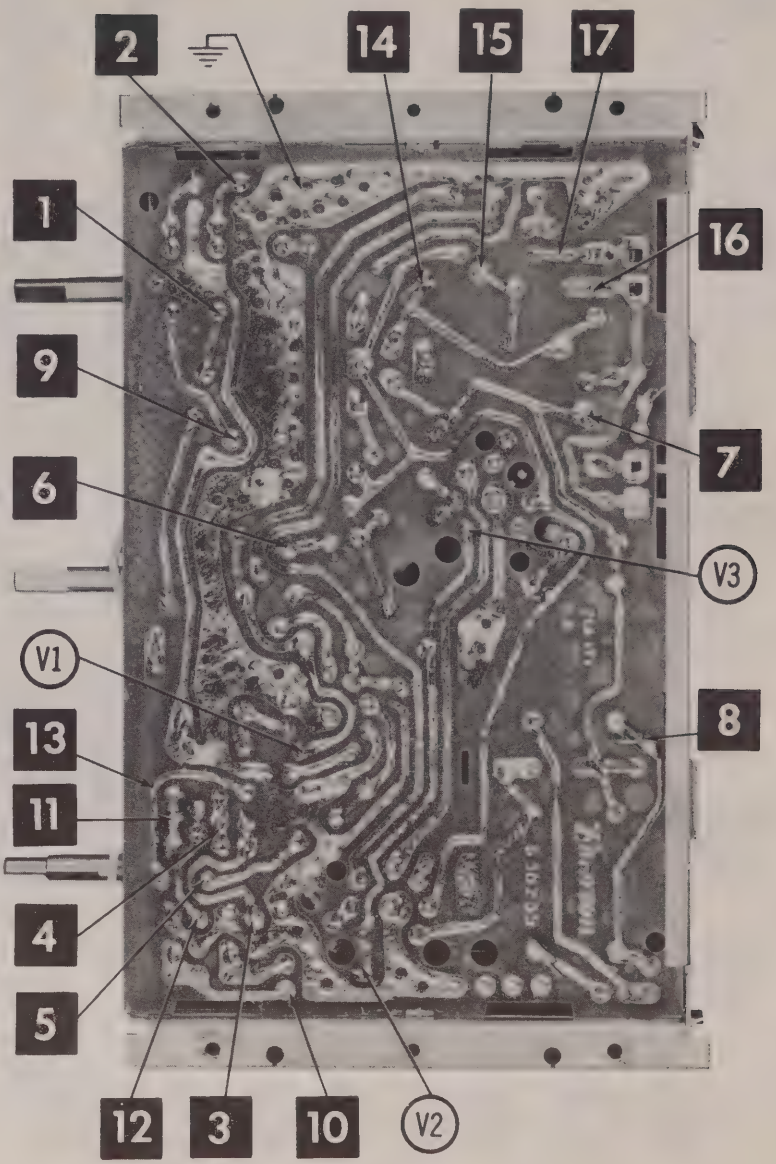
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



EMERSON MODEL 898B (Ch. 120456B)

PARTS LIST & DESCRIPTION (continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	EMERSON PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2300Ω	6-8Ω	734181	24S64 ①	A-2902①	AU-604①	A-3849①	24S64 ①		① Use Original Frame
T2	2300Ω	6-8Ω	734181	24S64 ①	A-2902①	AU-604①	A-3849①	24S64①		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	180155A ①	4A1 ①	① Connect in Series And Phase
SP2	4"	PM	3-4Ω	180155A ①	4A1 ①	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	EMERSON PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.090A	817079 ①	HA504①	SD-94	K200①		① Silicon

PHONO CARTRIDGE

ITEM No	REPLACEMENT DATA						REMARKS
	EMERSON PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	962326	13-TB *						* Includes needle and mounting mechanism.

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M3	Switch	962379	Monaural-Stereo
M4	Switch		Off-On Phono Motor
M5	Switch	510148	Off-On
M6	Switch	510146	Speaker (Internal-Both-External)
	Printed Board	630239	

CABINETS & CABINET PARTS

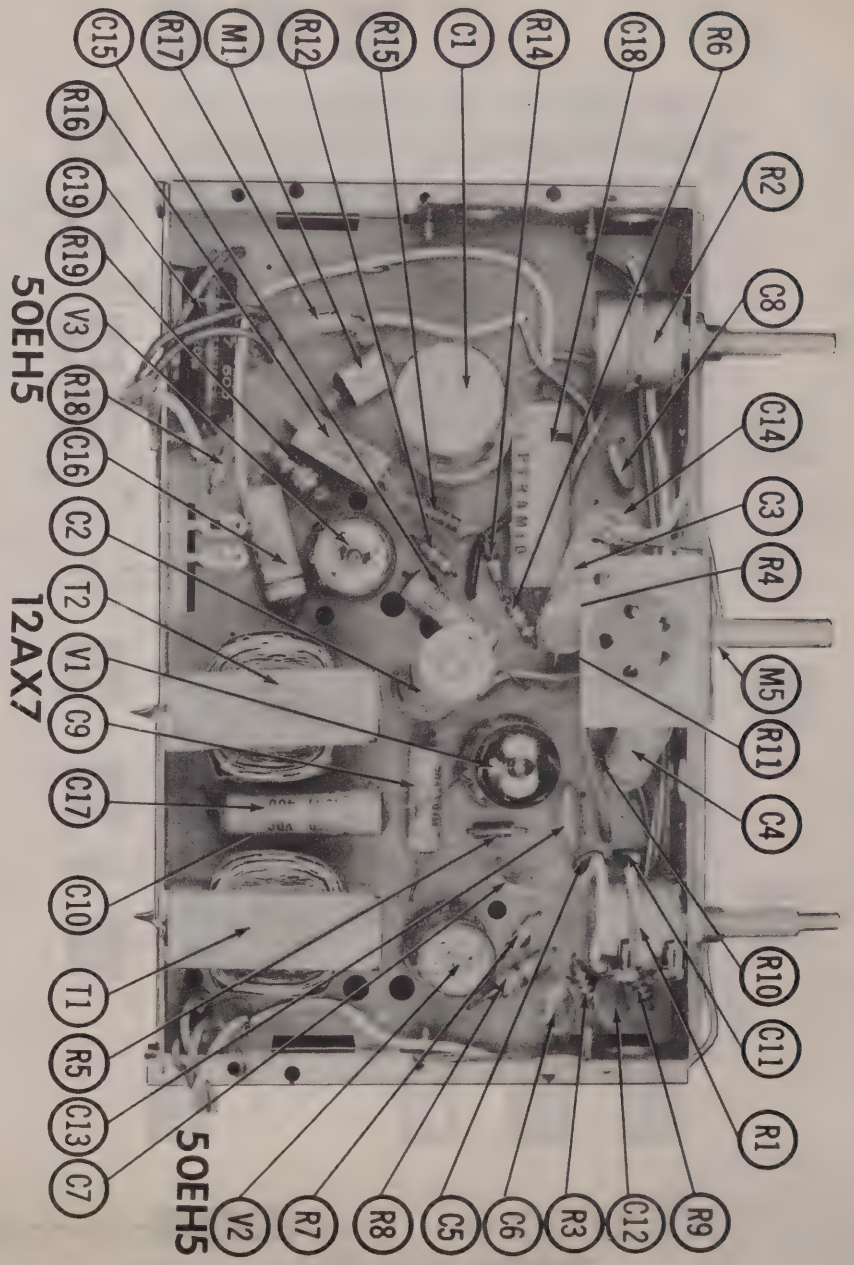
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	461074	Loudness, Outer
Knob	461075	Loudness, Inner
Knob	461076	Off-On, Tone
Knob	460935	Speaker Selector
Knob	961842	Control (On Changer)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW



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GENERAL ELECTRIC MODELS AS15A, AS16A, RT1230A, RT1231A

GENERAL ELECTRIC MODELS
AS15A, AS16A, RT1230A, RT1231A

MODEL RT-1230

GENERAL ELECTRIC MODELS
AS15A, AS16A, RT1230A, RT1231A

TRADE NAME	General Electric Models AS15A, AS16A, RT1230A, RT1231A
MANUFACTURER	General Electric Co., Product Service, Radio Receiver Dept., 869 Broad St., Utica, N. Y.
TYPE SET	AC Operated 4 Tube Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105-120 Volts AC, 60 Cycles RATING 54 Watts, .53 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR V-M 1200A – PHOTOFACT SET 353 FOLDER 16 OR RECORD CHANGER MANUAL RC-10

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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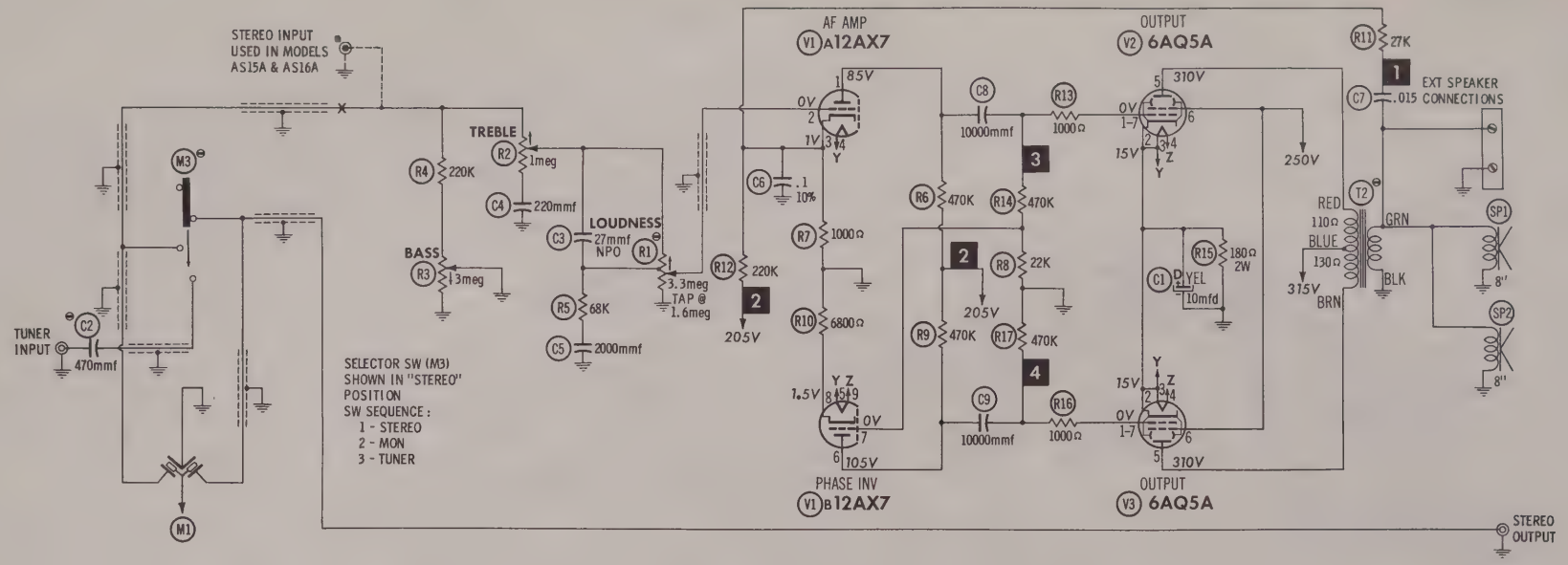
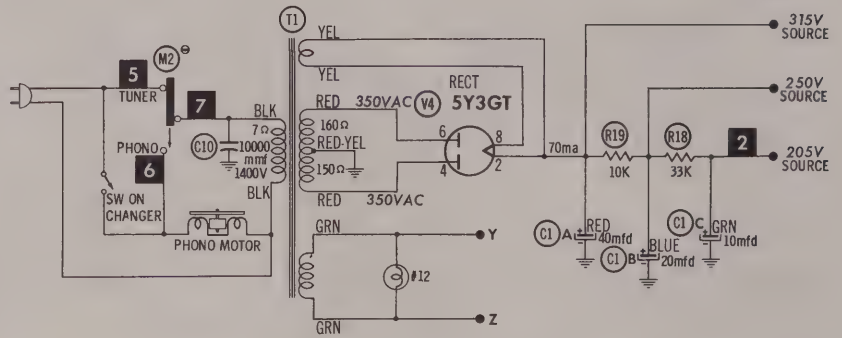
SET 458 FOLDER 9



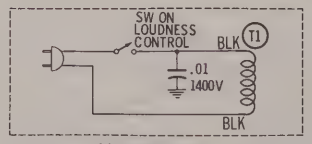
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†510K	0Ω	1000Ω	180Ω	180Ω	†510K	22K	6800Ω	180Ω
V2	6AQ5A	490K	180Ω	180Ω	180Ω	†110Ω	†10K	490K		
V3	6AQ5A	470K	180Ω	180Ω	180Ω	†130Ω	†10K	470K		
V4	5Y3GT	NC	¶	NC	150Ω	NC	160Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 2 OF V4
NC NO CONNECTION



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.



AC CONNECTIONS
USED IN MODELS
AS15A & AS16A

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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GENERAL ELECTRIC MODELS
AS15A, AS16A, RT1230A, RT1231A

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS / GENERAL ELECTRIC / RAYTHEON / SYLVANIA)
V1	AF Amp. -Phase Inv.	12AX7
V2	Output	6AQ5A
V3	Output	6AQ5A
V4	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	350	RS-1641	PR4-185	BBRQ0170.5	WQ775		TVA-4748	
B	20	300							
C	10	300							
D	10	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	470			RS-1638	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	①
C3	27		NPO	RS-1639	NPO-DI 27	TCZ-27	C10Q27C	CNO-427	5TCC-Q27U	
C4	220			RS-1203	BPD-0002	DD-221	L10T22	B-322	5GA-T22	
C5	2000			RS-1640	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C6	.1	200	10%		V84C 2P1		PM2P1	GEM-201	2TM-P1	
C7	.015	200			P288N-015	DD16-153	CUB6S15	GEM-4115	2TM-P15	
C8	10000			RCW-3186	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C9	10000			RCW-3186	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C10	10000	1400		RS-1518	DAC-27	DD-103	HVE16S	2HV-110	20HKB-S1	

① Not used in Models AS15A, AS16A

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	3.3meg	½	RS-1642	BT-180		Q18-140X	UDT303*	Loudness, Tap @ 1.6meg①
R2A	1meg	½	RS-1644	B-70	A47-1meg-Z	Q13-137	U53	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	3meg	½	RS-1643	B-85	A47-3meg-Z	Q13-140	U57	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

① Models AS15A, AS16A use 3meg tapped control with switch in this application (Part #RS-1677).
* Disregard Tap #1.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	G. E. PART No.	NOTES
R4	220K			
R5	68K			
R6	470K			
R7	1000Ω			
R8	22K			
R9	470K			
R10	6800Ω			
R11	27K			

ITEM No.	RATING OHMS	RATING WATT	G. E. PART No.	NOTES
R12	220K			
R13	1000Ω			
R14	470K			
R15	180Ω	2		
R16	1000Ω			
R17	470K			
R18	33K			
R19	10K			

PRINTED BOARD

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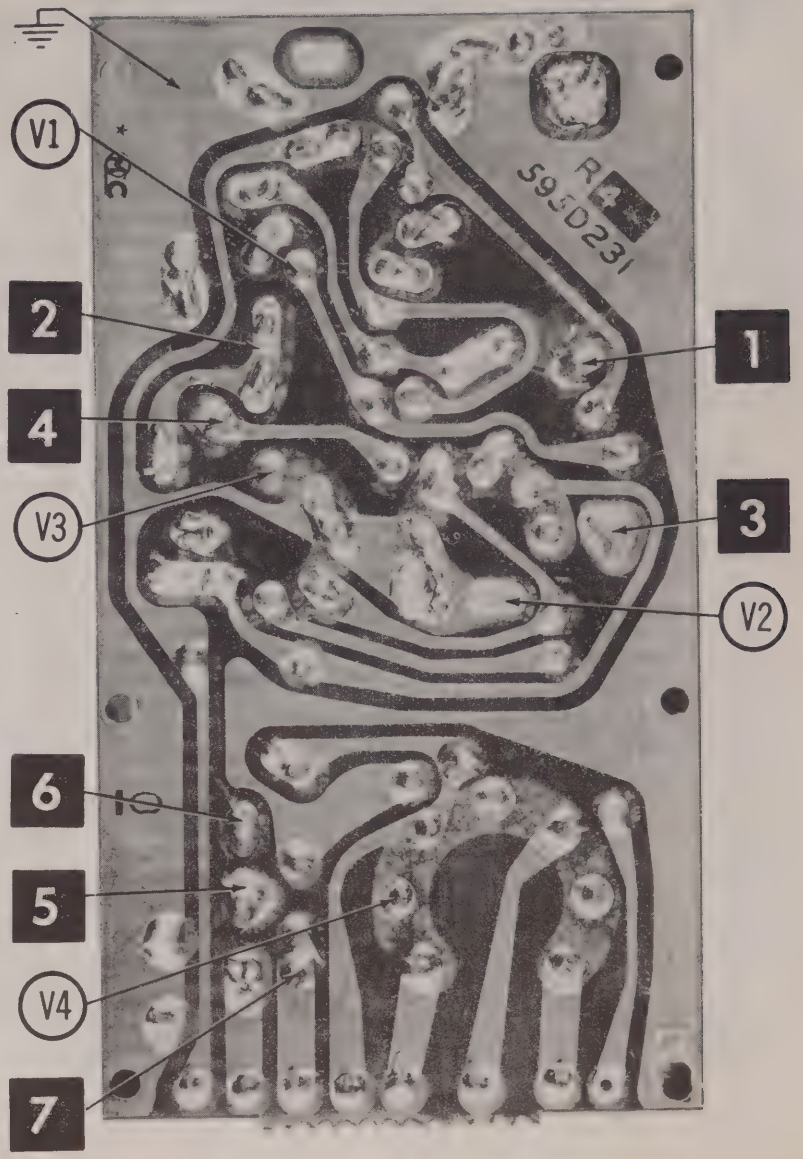
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	G. E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .53A	700 VCT @ .070A	5V @ 2A	RS-1645						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1.4A									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	G. E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5600Ω CT	1-2Ω	RS-1646 ①	26S59	A-3021	AU-609	A-3870	26S59	S-55X	① #RS-1678 Used in Models AS15A, AS16A

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	G. E. PART No.	QUAM PART No.	
SP1	8"	PM	3-4Ω	RB1086 ①	8A21 ①	① Parallel & Phase
SP2	8"	PM	3-4Ω	RB1086 ①	8A21 ①	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	G. E. PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	RS-1652 ①	13TX *						* Includes needle & mounting mechanism. ① Not used in Models AS15A, AS16A.

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M2	Switch	RS-1221	Phono-Tuner (SPDT, Slide Type) Not Used in Models AS15A, AS16A
M3	Switch	RS-1649	Tuner-Monaural-Stereo (SPTT, Slide Type) Not Used in Models AS15A, AS16A

CABINETS & CABINET PARTS

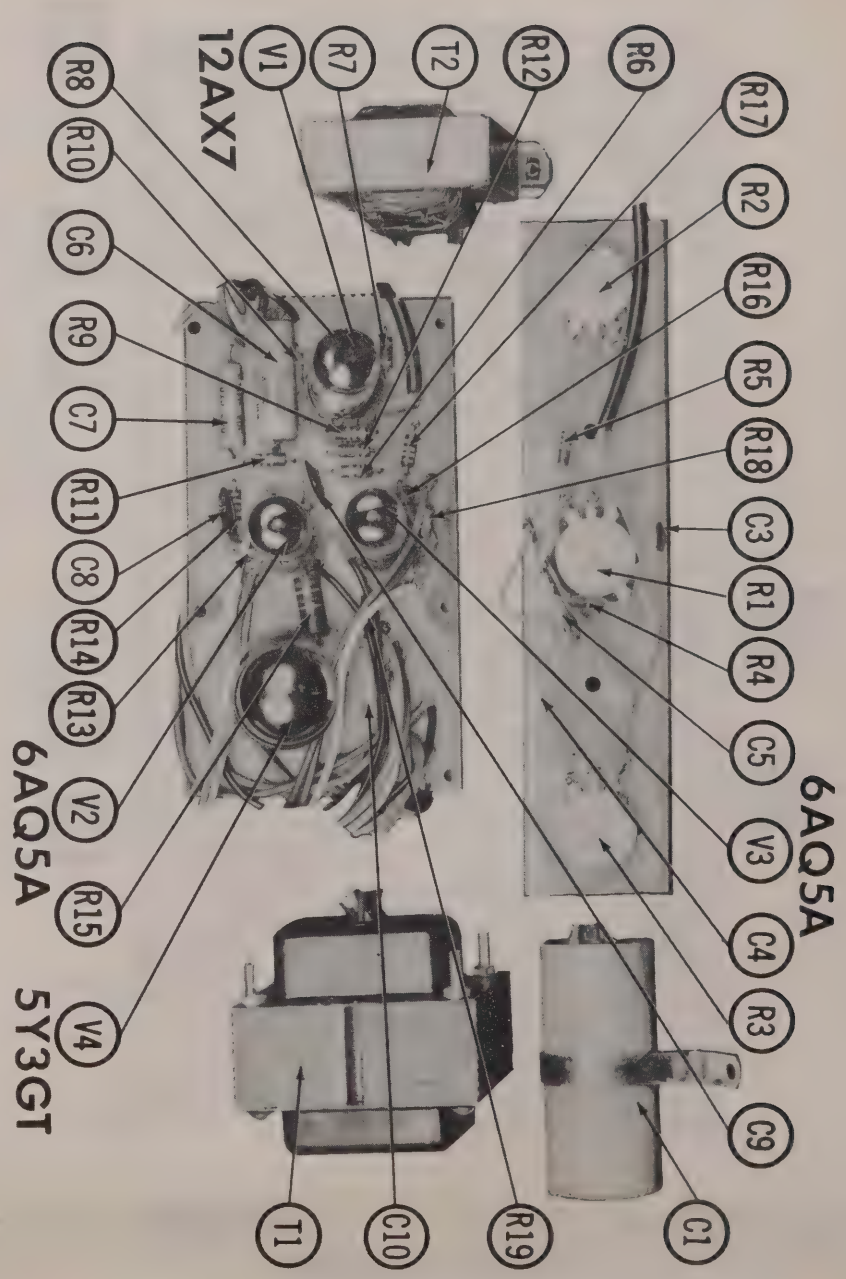
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	RS-1629	
Leg	RS-1630	Model RT1230A
Leg	RS-1631	Model RT1231A

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW



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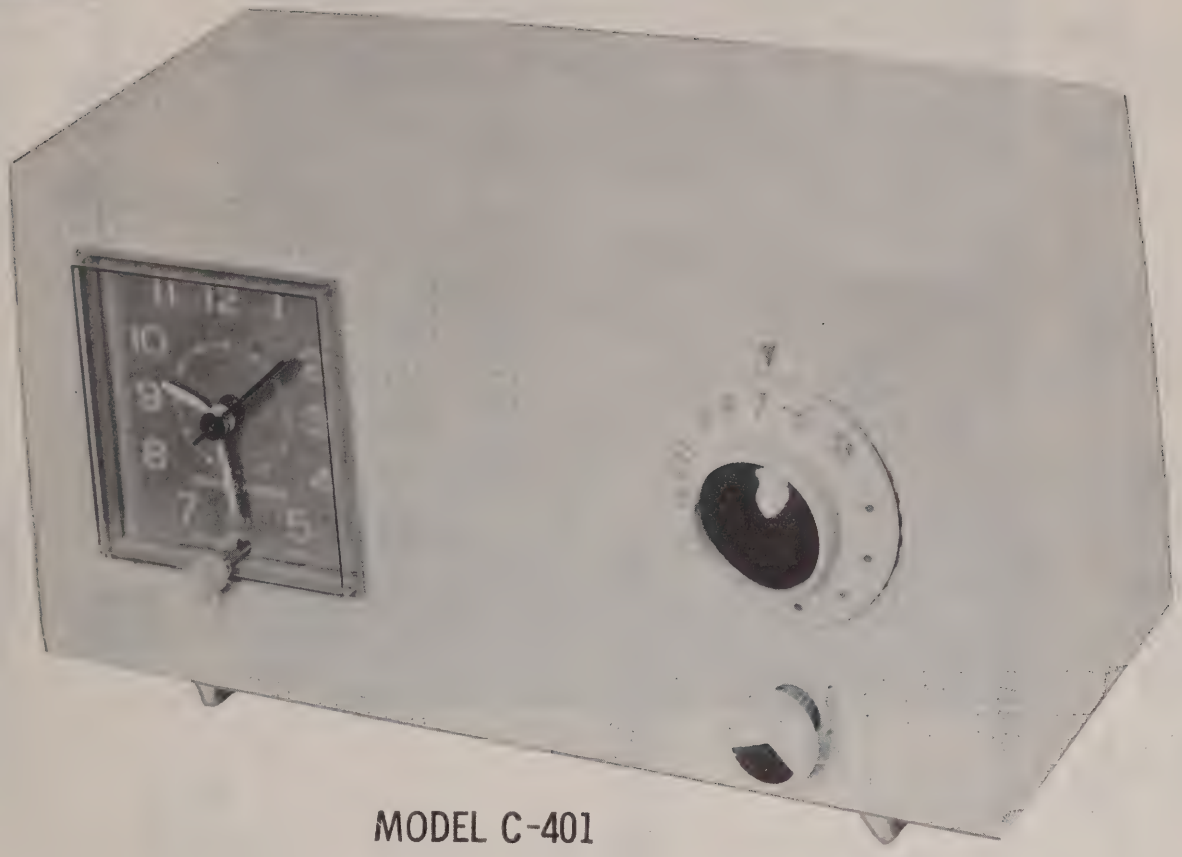
GENERAL ELECTRIC MODELS C-400A, C-401A

GENERAL ELECTRIC MODELS
C-400A, C-401A



MODEL C-401

GENERAL ELECTRIC MODELS
C-400A, C-401A

TRADE NAME	General Electric Models C-400A, C-401A
MANUFACTURER	General Electric Co., Product Service, Radio Receiver Dept., 869 Broad St., Utica, N. Y.
TYPE SET	AC Operated 4 Tube AM Receiver With Electric Clock
POWER SUPPLY	105-120 Volts AC, 60 Cycles
RATING	25 Watts, .28 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	535—1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1, A2..... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2543, 2544
A3, A4..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of Converter. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.		Loop	1620KC	"	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	1500KC	"	A4	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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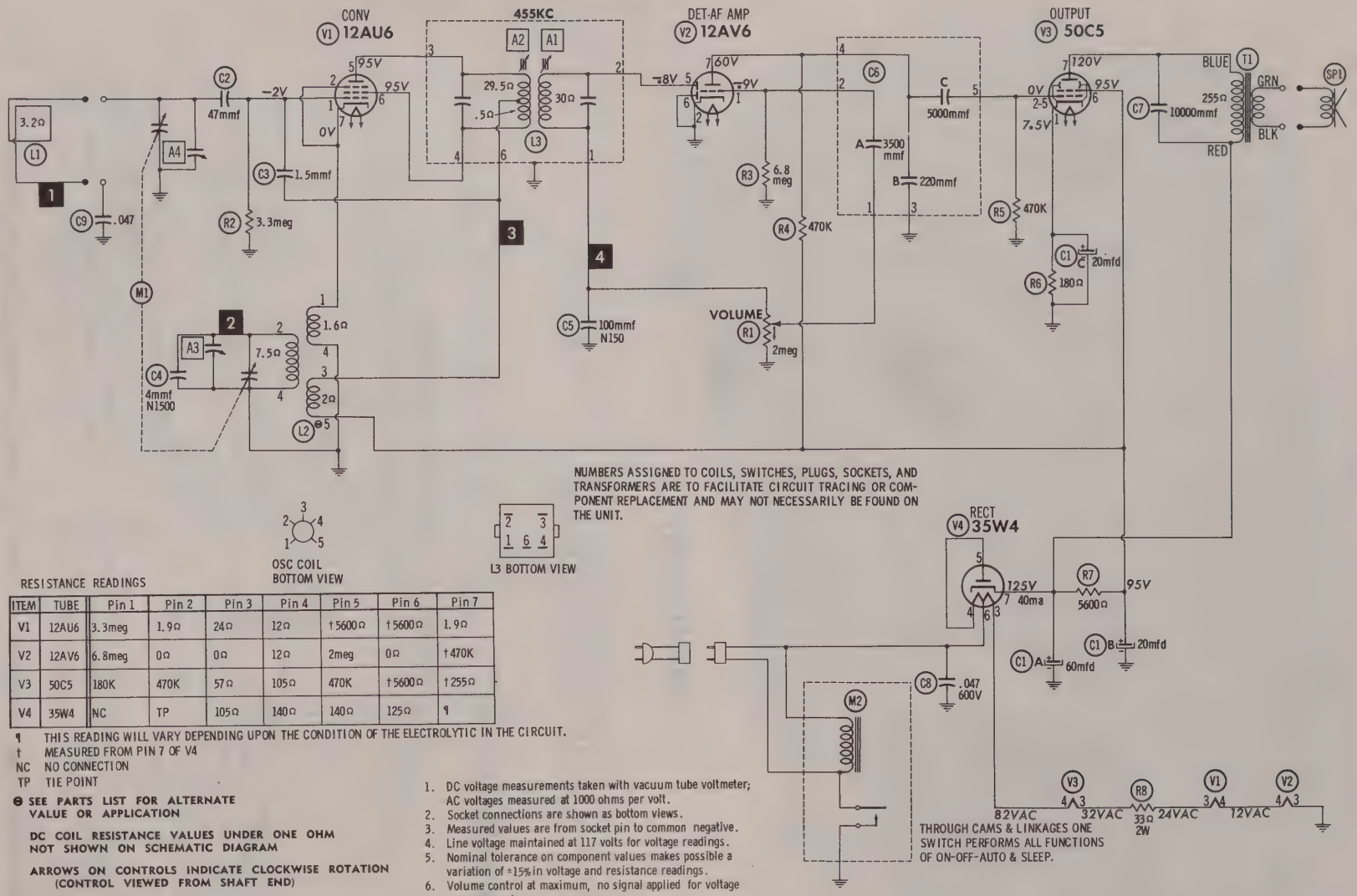

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AU6	3.3meg	1.9Ω	24Ω	12Ω	†5600Ω	†5600Ω	1.9Ω
V2	12AV6	6.8meg	0Ω	0Ω	12Ω	2meg	0Ω	†470K
V3	50C5	180K	470K	57Ω	105Ω	470K	†5600Ω	†255Ω
V4	35W4	NC	TP	105Ω	140Ω	140Ω	125Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V4
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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GENERAL ELECTRIC MODELS C-400A, C-401A

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12AU6	V3	Output	50C5
V2	Det. -AF Amp.	12AV6	V4	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	60	150	RCE-217						
B	20	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	47				SI-47	D6-470	L10Q47	UC-5447	5GA-Q47	
C3	1.5			RCN-048	NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15	
C4	4		N1500	RCW-3209						
C5	100		N150	RCW-3079						
C6A	3500				BPD-0033	DD-332	BYA10D33	B-233	5HK-D33	
B	220			RCW-3038	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C	5000				BPD-005	DD-502	L10D5	B-250	5HK-D5	
C7	10000			RS-1022	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C8	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C9	.047	200			P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	RS-1028	B-76	A47-2meg-Z	Q13-139	U55	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R2	3.3meg			
R3	6.8meg			
R4	470K			
R5	470K			

ITEM No.	RATING		G. E. PART No.	NOTES
	OHMS	WATT		
R6	180Ω			
R7	5600Ω			
R8	33Ω	2		

PRINTED BOARD

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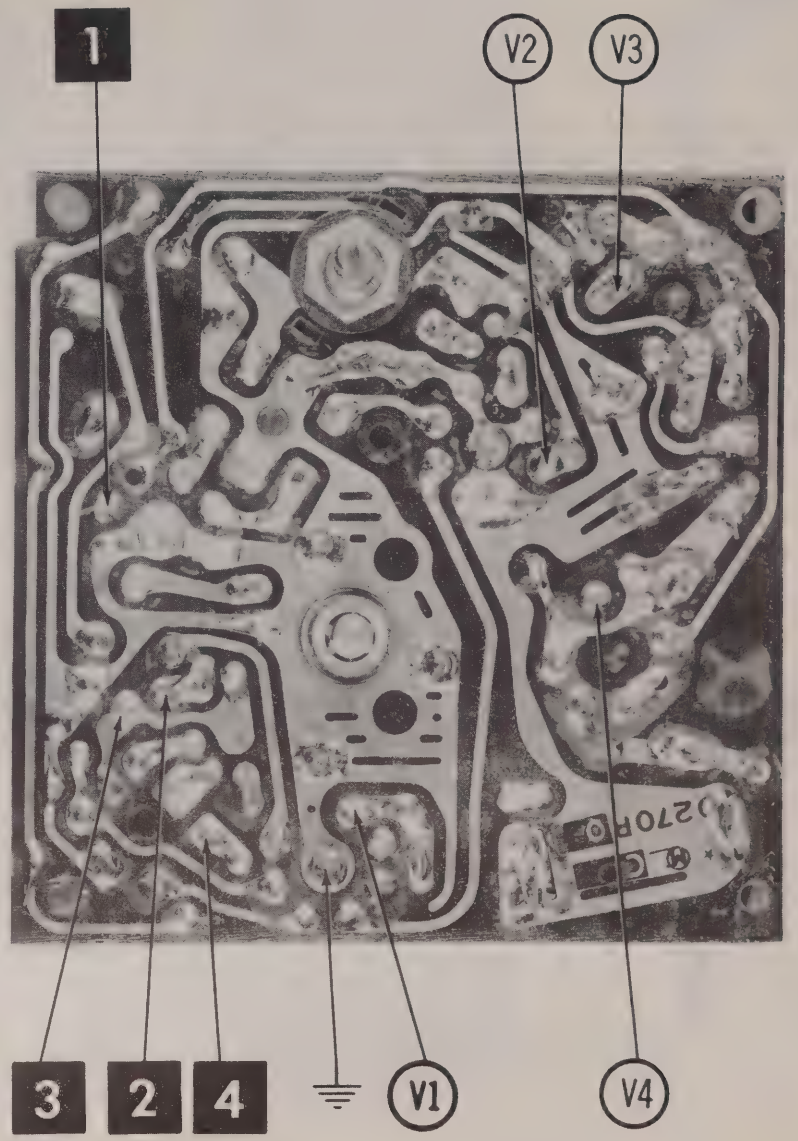
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		G. E. PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1 L2 L3	Loop Ant. Osc. Coil IF Trans.	RAB-305 † RS-1414 RS-1027						①

† Includes Cabinet Back
① Model C400A Uses Part #RLC-135 In This Application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	G. E. PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	3-4Ω	RTO-176	26S58 ①	A-3025①	AU-605①	A-3332①	26S58 ①	S-12X ①	① Use Original Frame

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	G. E. PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	ROP-035	4A07	

MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M1	Tuning Cap	RCT-097	2 Gang (Ant. 10—373mmf, Osc. 10—113mmf)
M2	Clock	J-2	Timer Assembly

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

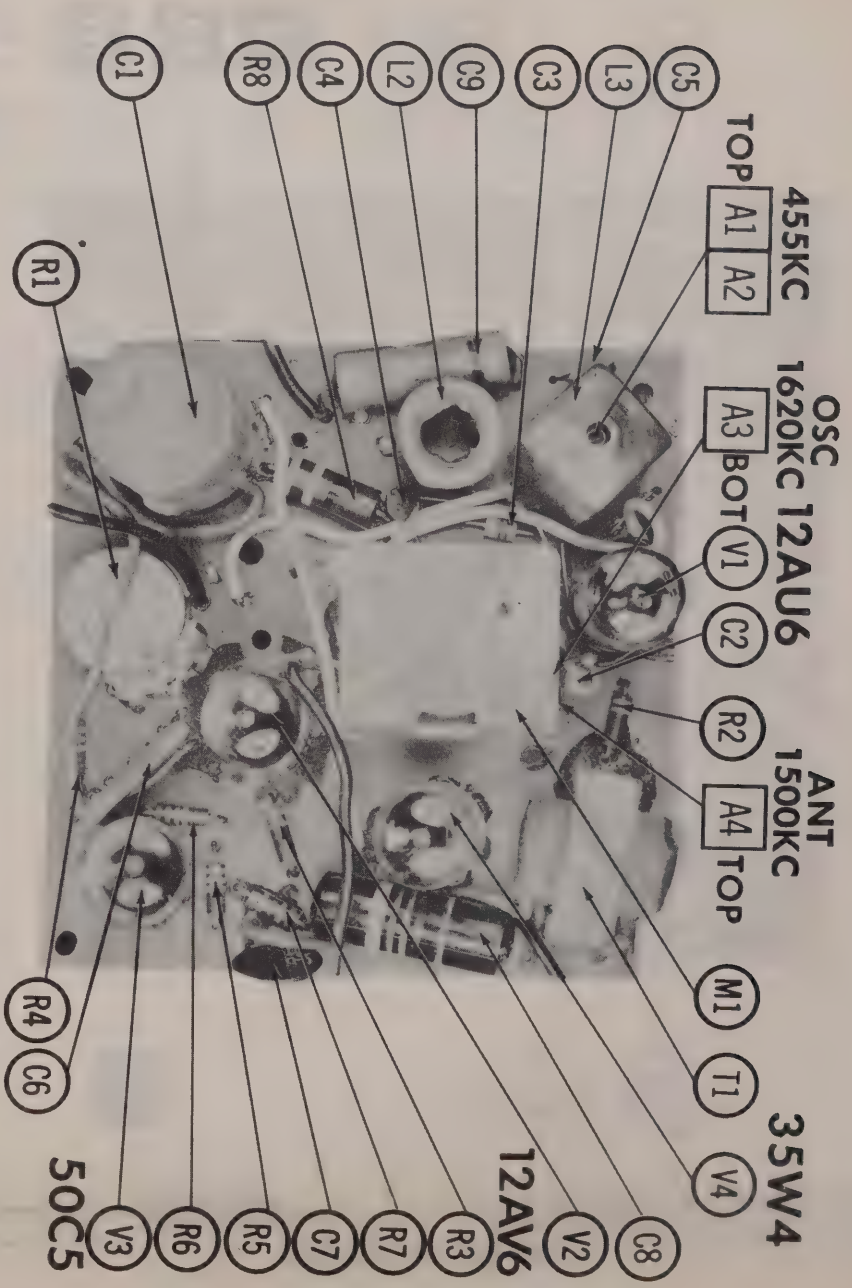
NAME	PART NO.	DESCRIPTION
Knob	RS-1263	Tuning, Includes Insert Model C-400A
Knob	RS-1667	Tuning, Includes Insert Model C-401A
Knob	RS-1264	Volume
Knob	RZK-031	Clock
Crystal	RZW-025	Clock
Cabinet	RB-1049	Model C400A
Cabinet	RB-1087	Model C401A

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



PHOTOFACT* Folder with CIRCUITRACE*

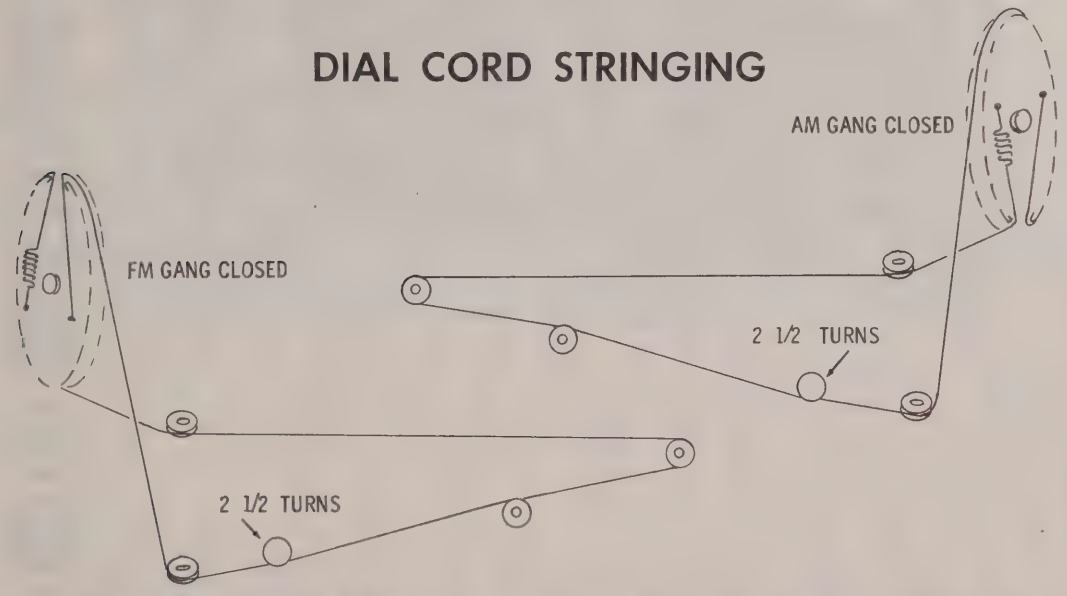
EIA

HARMAN-KARDON MODEL TP-200

HARMAN-KARDON
MODEL TP-200

TRADE NAME	Harman-Kardon Model TP200 (The Concerto)		
MANUFACTURER	Harman-Kardon, Inc., 520 Main Street, Westbury, L.I., N. Y.		
TYPE SET	AC Operated 14 Tube FM-AM Tuner And Stereo Preamplifier		
POWER SUPPLY	105-125 Volts AC, 60 Cycles	RATING	55 Watts, .55 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	530-1640KC	FREQ. MOD.	88 — 108MC

DIAL CORD STRINGING



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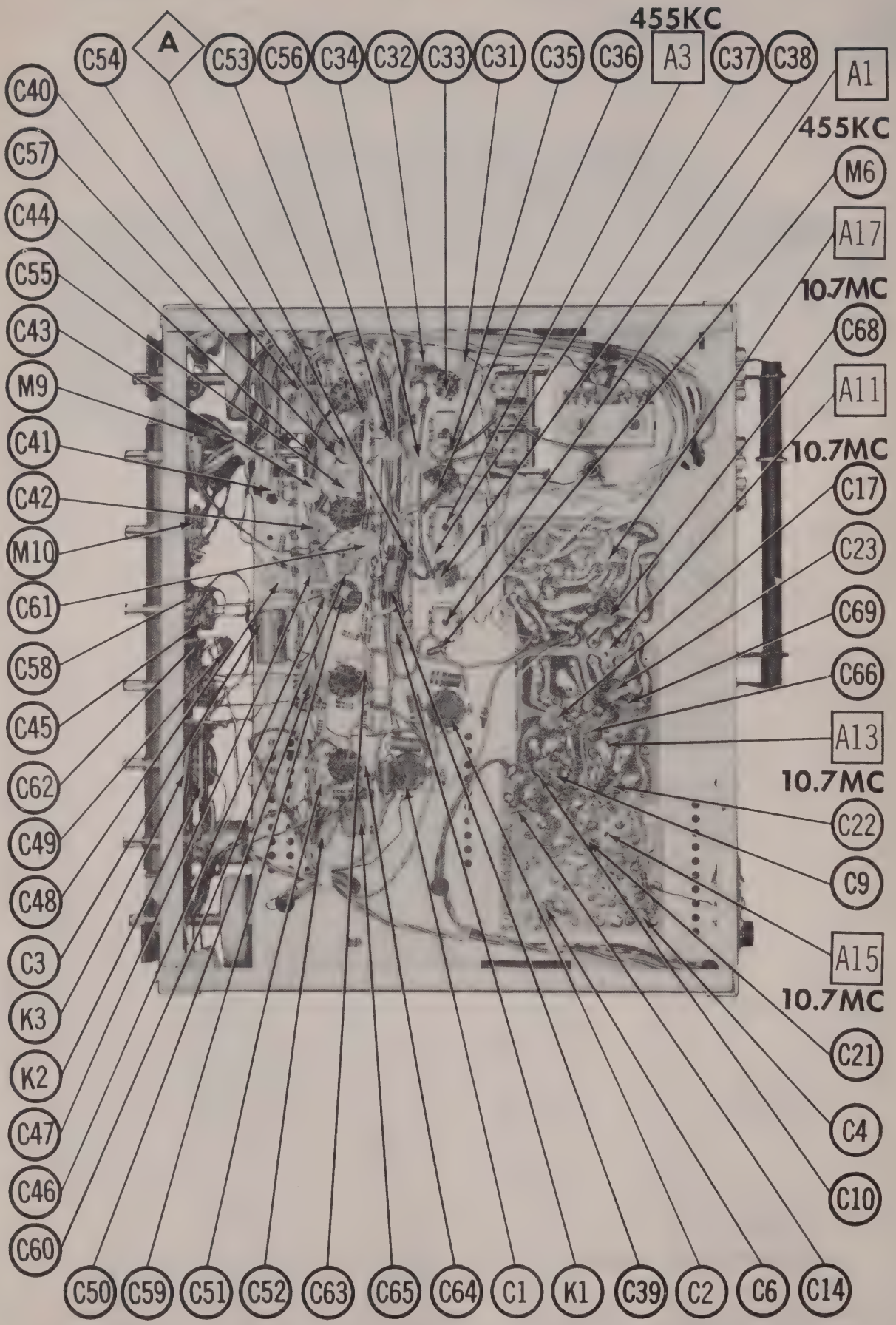
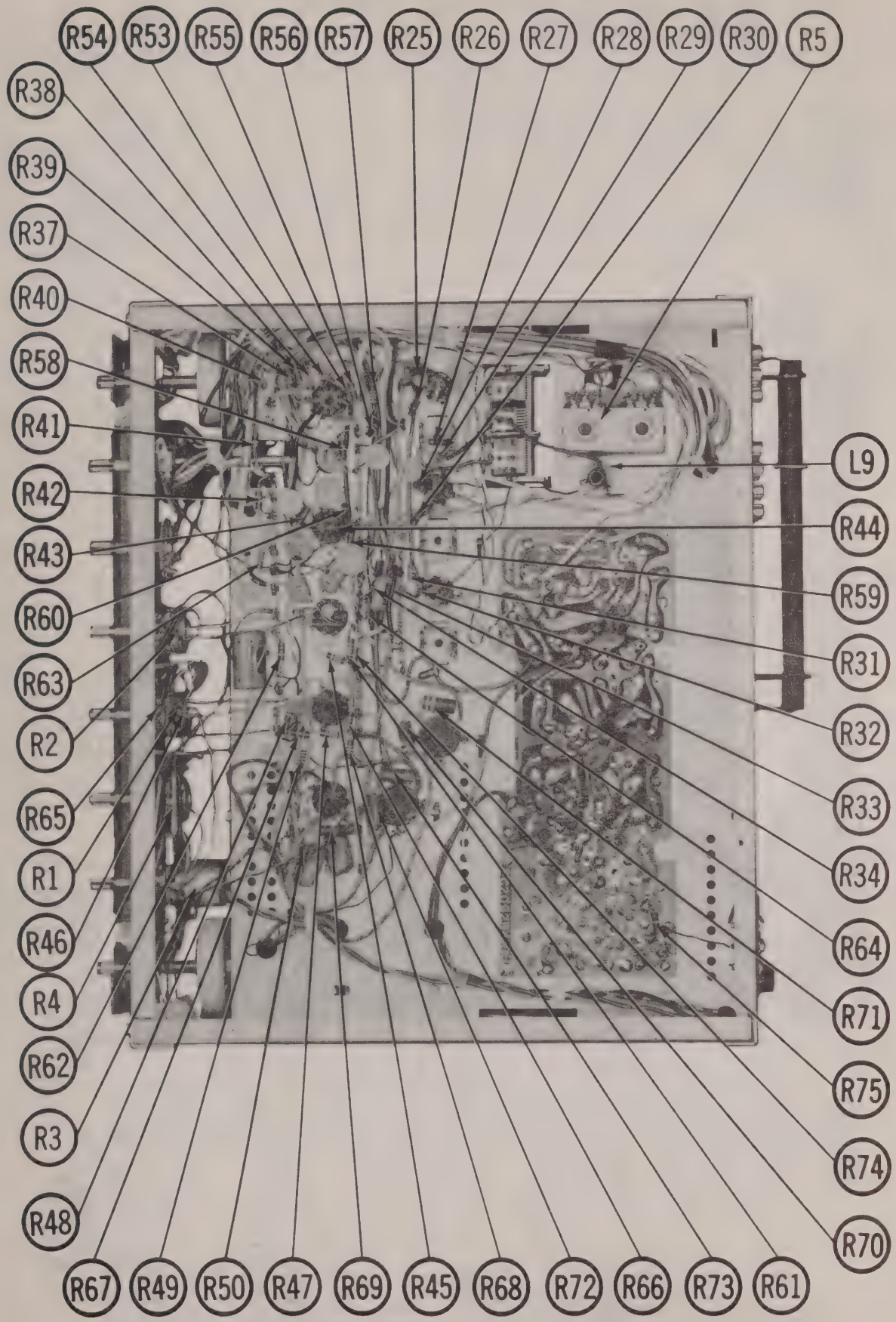
JZ325

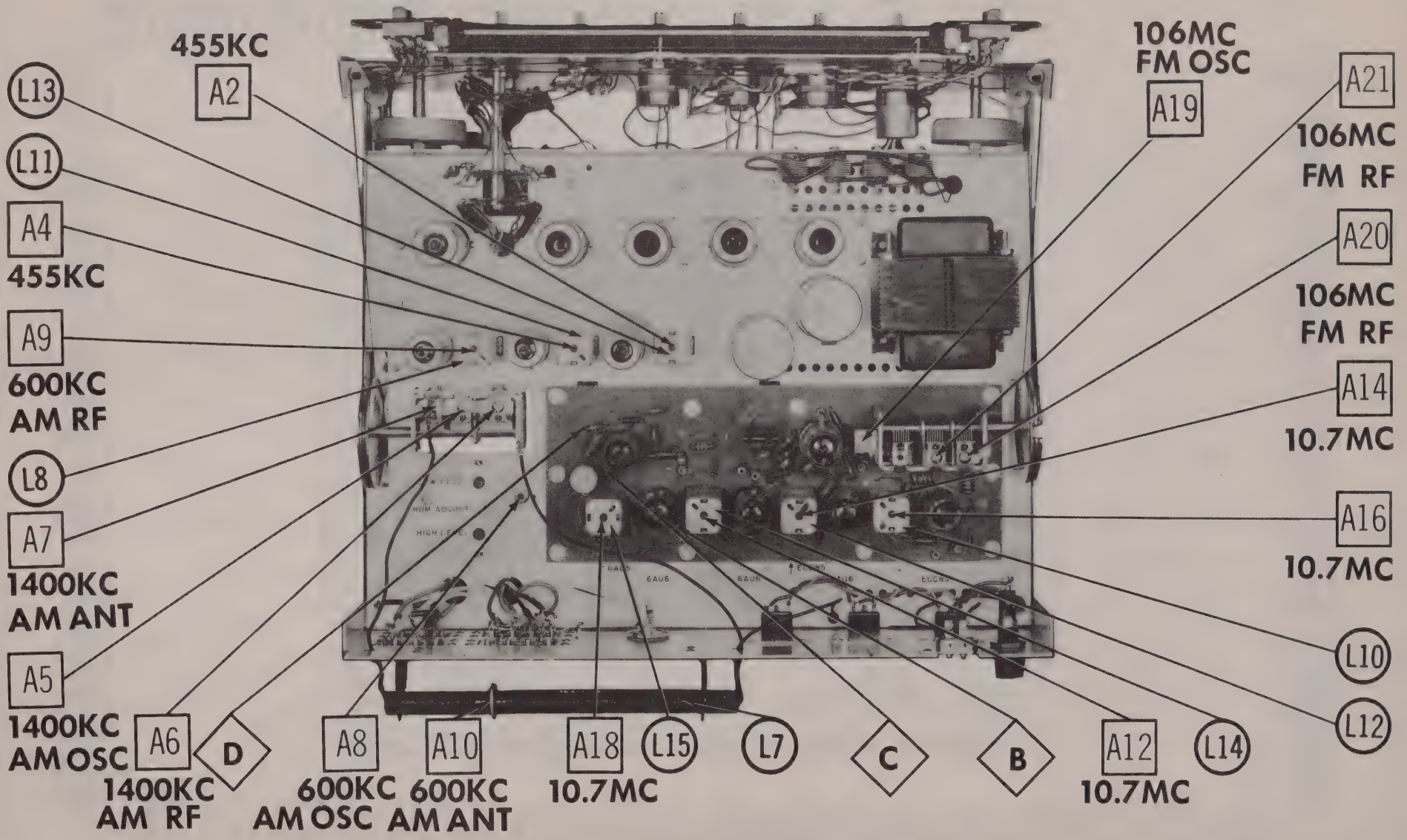
SET 458 FOLDER 11



CHASSIS BOTTOM VIEW — ALIGNMENT, CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW — RESISTOR & INDUCTOR IDENT.



CHASSIS TOP VIEW – ALIGNMENT & INDUCTOR IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loudness control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
- A1 thru A4, A9, All thru A18.....GENERAL CEMENT #5097, 8727; WALSCO #2515
- A5, A6, A7, A19, A20, A21.....GENERAL CEMENT #5004, 5008, 5009; WALSCO #2520
- A8.....GENERAL CEMENT #8606, 8606L, 8282, 9295; WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (Unmod.)	AM	1600KC	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	High side to AM antenna terminal. Low side to chassis.	1400KC	"	1400KC	"	A5, A6, A7	"
3.	"	"	600KC	"	600KC	"	A8, A9, A10	Adjust for maximum deflection. Repeat Step 2.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	.005mfd	High side to pin 7 of FM Mixer. Low side to chassis	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point (B). Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
5.	"	"	"	"	"	DC probe to point (C). Common to chassis.	A17	"
6.	"	"	"	"	"	DC probe to point (D). Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	.005mfd	High side to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference.	Vert. amp. to point (B). Low side to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A17	"
6.	"	"	"	"	"	Vert. amp. to point (D). Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across FM antenna terminals with 120Ω in each lead.	106MC (Unmod.)	FM	106MC	DC probe to point (B). Common to chassis.	A19, A20 A21	Adjust for maximum deflection.
8.	"	"	90MC	"	90MC	"	L4, L1, L3	"

FIG. 1

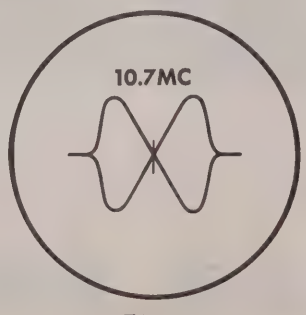
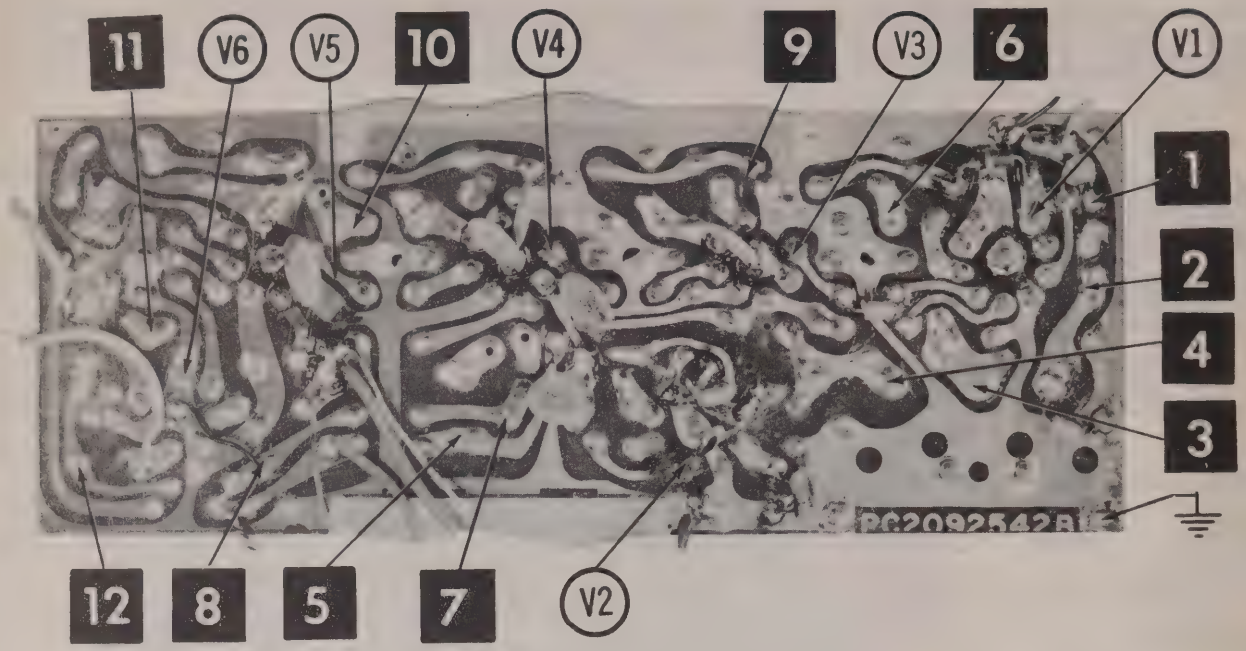


FIG. 2



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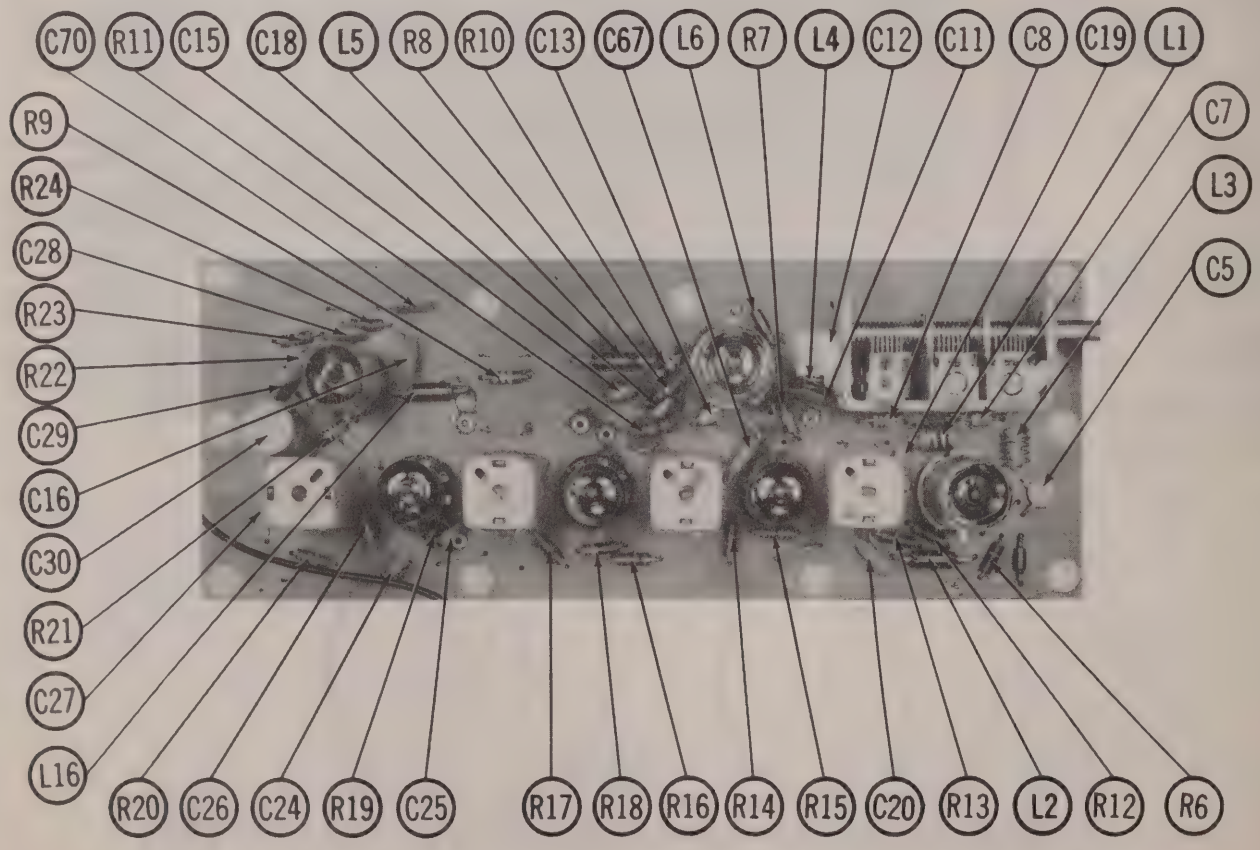
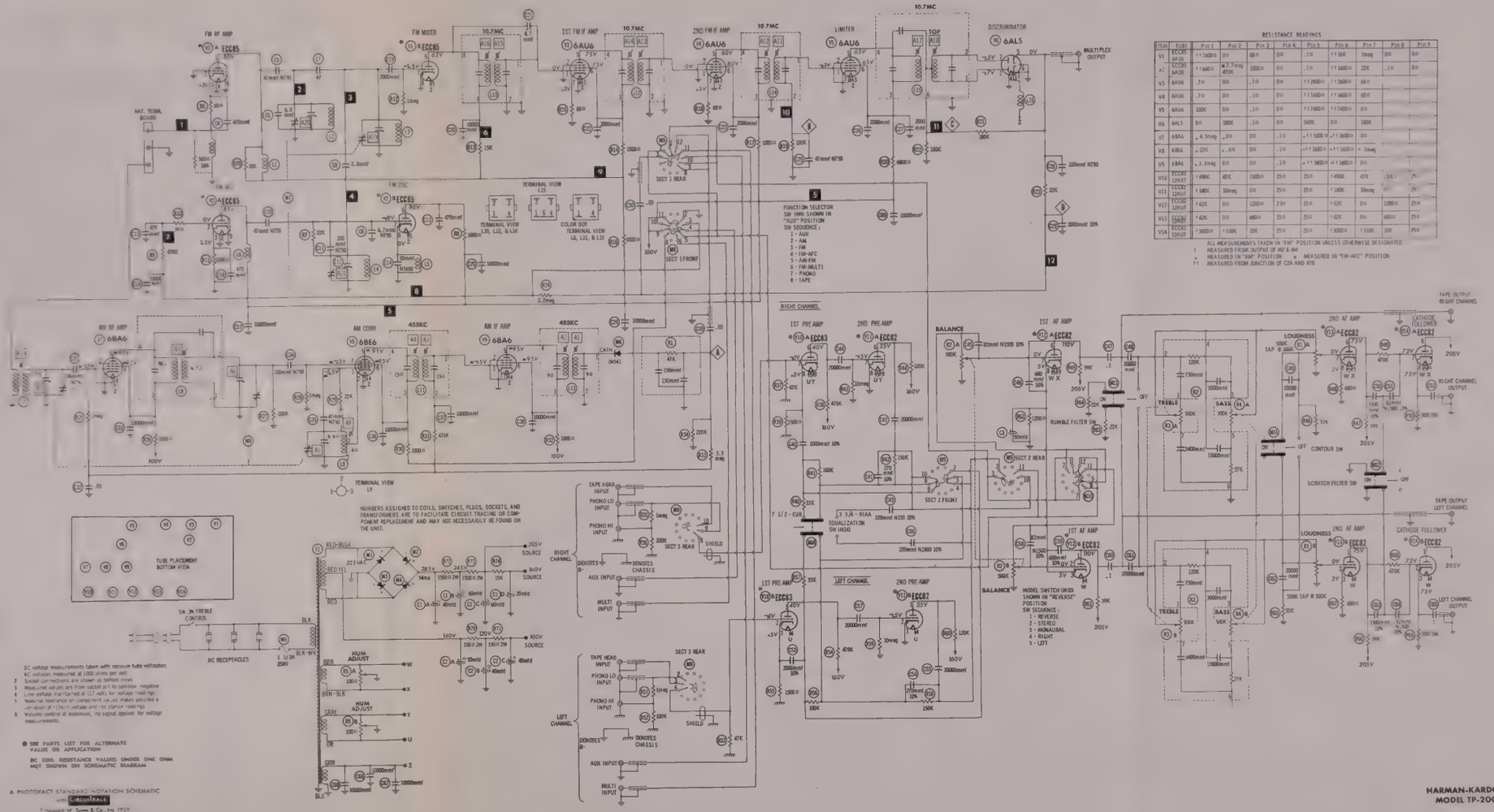
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PRINTED BOARD — CAPACITOR, RESISTOR & INDUCTOR IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	††1600Ω	0Ω	680Ω	0Ω	1Ω	††1MΩ	3meg	0Ω	0Ω
V2	ECC85 6AQ8	††660Ω	●2.7meg 470K	1000Ω	0Ω	1Ω	††1600Ω	22K	1Ω	0Ω
V3	6AU6	7Ω	0Ω	1Ω	0Ω	††2600Ω	††2600Ω	68Ω		
V4	6AU6	7Ω	0Ω	1Ω	0Ω	††1600Ω	††1600Ω	68Ω		
V5	6AU6	300K	0Ω	1Ω	0Ω	††7400Ω	††7400Ω	0Ω		
V6	6AL5	0Ω	180K	1Ω	0Ω	360K	0Ω	180K		
V7	6BA6	▲4.5meg	▲0Ω	0Ω	1Ω	††1600Ω	▲††1600Ω	0Ω		
V8	6BE6	▲22K	▲.4Ω	0Ω	1Ω	††1600Ω	▲††1600Ω	▲1meg		
V9	6BA6	▲3.3meg	0Ω	0Ω	1Ω	††1600Ω	▲††1600Ω	0Ω		
V10	ECC83 12AX7	†490K	47K	1500Ω	25Ω	25Ω	†490K	47K	5Ω	7Ω
V11	ECC82 12AU7	†140K	10meg	0Ω	25Ω	25Ω	†140K	10meg	0Ω	7Ω
V12	ECC82 12AU7	†42K	0Ω	1200Ω	23Ω	25Ω	†42K	0Ω	1200Ω	25Ω
V13	ECC82 12AU7	†42K	0Ω	680Ω	25Ω	25Ω	†42K	0Ω	680Ω	25Ω
V14	ECC82 12AU7	†3000Ω	†510K	10K	25Ω	25Ω	†3000Ω	†510K	10K	79Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM OUTPUT OF V42 & V44
▲ MEASURED IN "AM" POSITION ● MEASURED IN "FM-AFC" POSITION
†† MEASURED FROM JUNCTION OF C2A AND R70

DC voltage measurements taken with vacuum tube voltmeter.
AC voltages measured at 1000 ohms per volt.
Socket connections are shown as bottom views
Measured values are from socket pin to common negative
Line voltage maintained at 117 volts for voltage readings
Resistor tolerance on components values marked ● is ±5% ▲ is ±10% all others ±20%
Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

BC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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HARMAN-KARDON
MODEL TP-200

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Mixer	ECC85/6AQ8	V10	Left Channel 1st Preamp. - Right Channel 1st Preamp.	ECC83/12AX7
V2	FM Osc. -FM AFC	ECC85/6AQ8	V11	Left Channel 2nd Preamp. - Right Channel 2nd Preamp.	ECC82/12AU7
V3	1st FM IF Amplifier	6AU6	V12	Left Channel 1st AF Amp. - Right Channel 1st AF Amp.	ECC82/12AU7
V4	2nd FM IF Amplifier	6AU6	V13	Left Channel 2nd AF Amp. - Right Channel 2nd AF Amp.	ECC82/12AU7
V5	Limiter	6AU6	V14	Left Channel Cathode Foll.- Right Channel Cath. Foll.	ECC82/12AU7
V6	Discriminator	6AL5			
V7	AM RF Amplifier	6BA6			
V8	AM Converter	6BE6			
V9	AM IF Amplifier	6BA6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Harman-Kardon PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲40	350	JE2493088		C0230		TMT-29	TVLS-4635.13*	
B	■60	350			BR6035		TD-60-350		
C	▲60	350							
D	20	350							
C2A	▲50	200	JE2502988	AFH4-02-10	D0022	FP419.5	TMD-31	TVL-2575	
B	■40	200					TD-50-450	TVA-1713	
C	▲40	200							
C3	50	25	JE2362786	PRS25V50	BBR50-25	TC29	TD-50-25	TVA-1206	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Harman-Kardon PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C5	47		N750		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47	
C6	6.8				NPO-SI 6.8	TCZ-6R8	L10V68	ZT-5568	5TCCB-V68	
C7	.47									
C8	2.2				NPO-SI 2.2	TCZ-2R2	C10V22C	CNO-522	5TCCB-V22	
C9	4.7		N750			DTN-5		CN7-547		
C10	47		N750		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47	
C11	100		N750		N750-DI 100	DTN-100	C10T1U	CN7-310	5TCU-T1U	
C12										
C13	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C14	10		N5600							
C15	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C16	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C18	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C19	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C20	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C21	4.7				NPO-SI 4.7	TCZ-4R7	C10V47C	CNO-547	5TCCB-V47	
C22	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C23	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C24	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

CAPACITORS (cont)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Harman-Kardon PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C25	47		N750		N750-DI 47	DTN-47	C10V47U	CN7-447	5TCU-Q47	
C26	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C27	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C28	100		N750		N750-DI 100	DTN-100	C10T1U	CN7-310	5TCU-T1U	
C29	2000		10%		DI-2000		PM6D2	GTM-1222	5GA-D2S 10%*	
C30	.05	200			P215N-05	DF-503	BC2S47-J	GTM-215	2TM-S47	
C31	100		N750		BPD-0001	DTN-100	C10T1U	CN7-310	5TCU-T1	
C32	.05	400			P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C33	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C34	100		N750		N750-DI 100	DTN-100	C10T1U	CN7-310	5TCU-T1	
C35	47		N750		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47	
C36	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C37	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C38	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C39	.05	400			P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C40	2000		10%		DI-2000		PM 6D2	GTM-6222	5GA-D2S 10%*	
C41	270		10%		DI-270	D6-271	L10T27		5GA-T27S 10%*	
C42	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C43	220		N150 10%							
C44	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C45	82		N1500 10%							
C46	600		10%						5GA-T6S 10%*	
C47	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C48	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C49	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C50	3300		10%		DI-3300		PM6D33	GTM-6233	6TM-D33	
C51	82		N1500 10%							
C52	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C53	2000		10%		DI-2000		PM6D2	JL-220	5HK-D2	
C54	270		10%		DI-270	D6-271	L10T27		5GA-T27	
C55	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C56	220		N1500 10%							
C57	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C58	82		N1500 10%							
C59	600		10%						5GA-T6S 10%*	
C60	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C61	20000				BPD-02	DD-203	BYB6S2	BYA10S2	5HK-S2	
C62	20000				BPD-02	DD-203	BYB6S2	BYA10S2	5HK-S2	
C63	3300		10%		DI-3300		PM6D33	GTM-6233	6TM-D33	
C64	82		N1500 10%							
C65	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C66	10000				BPD-01	DD-103	BYA10S1	B-120	5HK-S1	
C67	10000				BPD-01	DD-103	BYA10S1	B-120	5HK-S1	
C68	10000				BPD-01	DD-103	BYA10S1	B-120	5HK-S1	
C69	10000				BPD-01	DD-103	BYA10S1	B-120	5HK-S1	
C70	10000				BPD-01	DD-103	BYA10S1	B-120	5HK-S1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Harman-Kardon PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K *	1/2	RV2362729	BT-64			▲UE4025	Loudness, Right Channel
B	500K *	1/2		STR-64				Loudness, Left Channel
R2A	500K	1/2	RV2202847	B-59	AD47-500K-S	Q11-133		Balance, Right Channel
B	500K	1/2		SR-59	Not Req.	M11-133	■UE1295	Balance, Left Channel
C	Shaft			Not Req.	KSS-3	Not Req.		

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA						INSTALLATION NOTES
	RESISTANCE	WATTS	Harman-Kardon PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.		
R3A	500K	1/2	RV2493019	B-58	AD47-500K-Z	Q13-133			Treble, Right Channel
B	500K	1/2		SR-58	Not Req.	M13-133			Treble, Left Channel
C	Shaft			Not Req.	KSS-3	Not Req.	† U41403S		
D	Switch			KR-1	SWE-12	76-1			Off-On
E	Cover			KR-5	Not Req.	Not Req.			
R4A	500K	1/2	RV2362697	B-60	AD47-500K-Z	Q13-133			Bass, Right Channel
B	500K	1/2		SR-60	Not Req.	M13-133	$ UE3915		Bass, Left Channel
C	Shaft			Not Req.	KSS-3	Not Req.			Hum Adjust, High Level
R5A	100Ω	1/2	RV2362690						Hum Adjust, Low Level
B	100Ω	1/2							

* Tap ⓐ 300K
■ "STA-LOC" equivalent: FA55L, RU55L, CS3500
† "STA-LOC" equivalent: FA55A, RU55A, CS3500, US-41
$ "STA-LOC" equivalent: FA55A, RU55A, CS3500
▲ "STA-LOC" equivalent: FA55T35, RU55T35, CS3500

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Harman-Kardon PART No.	NOTES
	OHMS	WATT		
R6	68Ω			
R7	22K			
R8	1000Ω			
R9	470K			
R10	39Ω			
R11	1000Ω			
R12	1meg			
R13	15K			
R14	1000Ω			
R15	68Ω			
R16	1000Ω			
R17	1000Ω			
R18	68Ω			
R19	100K			
R20	6800Ω			
R21	180K			
R22	180K			
R23	22K			
R24	2.2meg			
R25	1meg			
R26	1000Ω			
R27	100K			
R28	1meg			
R29	22K			
R30	1000Ω			
R31	470K			
R32	1000Ω			
R33	3.3meg			
R34	220K			
R35	1meg			
R36	100K			
R37	47K			
R38	470K			
R39	1500Ω			
R40	33K			

ITEM No.	RATING		Harman-Kardon PART No.	NOTES
	OHMS	WATT		
R41	100K			
R42	150K			
R43	10meg			
R44	120K			
R45	39K			
R46	33K			
R47	39K			
R48	680Ω			
R49	470K			
R50	10K	1		
R51	1meg			
R52	100K			
R53	47K			
R54	470K			
R55	1500Ω			
R56	100K			
R57	33K			
R58	150K			
R59	10meg			
R60	120K			
R61	39K			
R62	1200Ω			
R63	22K			
R64	22K			
R65	33K			
R66	39K			
R67	680Ω			
R68	470K			
R69	10K	1		
R70	330Ω	2		
R71	330Ω	2		
R72	1500Ω	2		
R73	1500Ω	2		
R74	15K			
R75	10K			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Harman-Kardon PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil		19-2003	19-2003		4584		3.3uh
L2	RF Choke							

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Harman-Kardon PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L3	FM RF Coil							
L4	FM Osc. Coil							
L5	Cathode Choke		19-1000	19-1000	BC-561	4602		1uh
L6	RF Choke							3.3uh
L7	Loopstick	GL2493016						
L8	AM RF Trans.	GT2493012						
L9	AM Osc. Coil	GLCOM3011						
L10	1st FM IF Trans.	GT2092595	16-3490	16-3490		1463-PC		
L11	1st AM IF Trans.	GT2493013	16-6758	16-6758	BC-352	12-C1	RF-1	
L12	2nd FM IF Trans.	GT2092596	16-3490	16-3490		1463-PC		
L13	2nd AM IF Trans.	GT2493014	16-6758	16-6758	BC-353	12-C2	RF-2	
L14	3rd FM IF Trans.	GT2092597	16-3490	16-3490		1463-PC		
L15	Discriminator	GT2092598	17-3491	17-3491		1464-PC		
L16	Fil. Choke							3.3uh

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Harman-Kardon PART No.	REPLACEMENT DATA
K1	AM Detector	150mmf, 150mmf, 47K	PC781599	Aerovox PA-98 Centralab PC-51 Cornell-Dubilier 111TM2 Sprague D-2
K2	Tone Compensation	750mmf, 3400mmf, 15000mmf, 3000mmf, 27K, 120K	PC2492902	Sprague TC-22
K3	Tone Compensation	750mmf, 3400mmf, 15000mmf, 3000mmf, 27K, 120K	PC2492902	Sprague TC-22

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Harman-Kardon PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117Vⓐ .55A	225-VCT ⓐ .080A	6.3Vⓐ .9A	FTCOM2989						
	SEC. 3	SEC. 4	SEC. 5							
	6.3Vⓐ .6A	6.3Aⓐ 3.2A								

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Harman-Kardon PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.054A	Z1362133 ①	1234AH ①	T065 ①	65A ①		①Selenium Type
M2	.054A	Z1362133 ①	1234AH ①	T065 ①	65A ①		
M3	.054A	Z1362133 ①	1234AH ①	T065 ①	65A ①		
M4	.054A	Z1362133 ①	1234AH ①	T065 ①	65A ①		

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Harman-Kardon PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M5	3AG	1½A 250V	ZCOM2953		31201.5 (3AG 1½A 250V)	342001	AGC 1½	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Harman-Kardon PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M6	1N541	GC1041698	1N60	1N60	1N295	AM Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Harman-Kardon PART No.	NOTES
M7	Tuning Cap	JV2092541	FM 3 Gang
M8	Tuning Cap	JV2352725	AM 3 Gang (Ant. 12-262mmf, RF 15-390mmf, Osc. 22-107mmf)
M9	Switch	ER2492937	Function
M10	Switch	ER2493124	Mode
M11	Switch	ESCOM2727	Contour, (DPDT, Slide Type)
M12	Switch	ESCOM2727	Scratch Filter, (DPDT, Slide Type)
M13	Switch	ESCOM2727	Rumble Filter, (DPDT, Slide Type)
M14	Switch	ESCOM2727	Equalization, (DPDT, Slide Type)
	Printed Board	PC2092542B	

CABINETS & CABINET PARTS

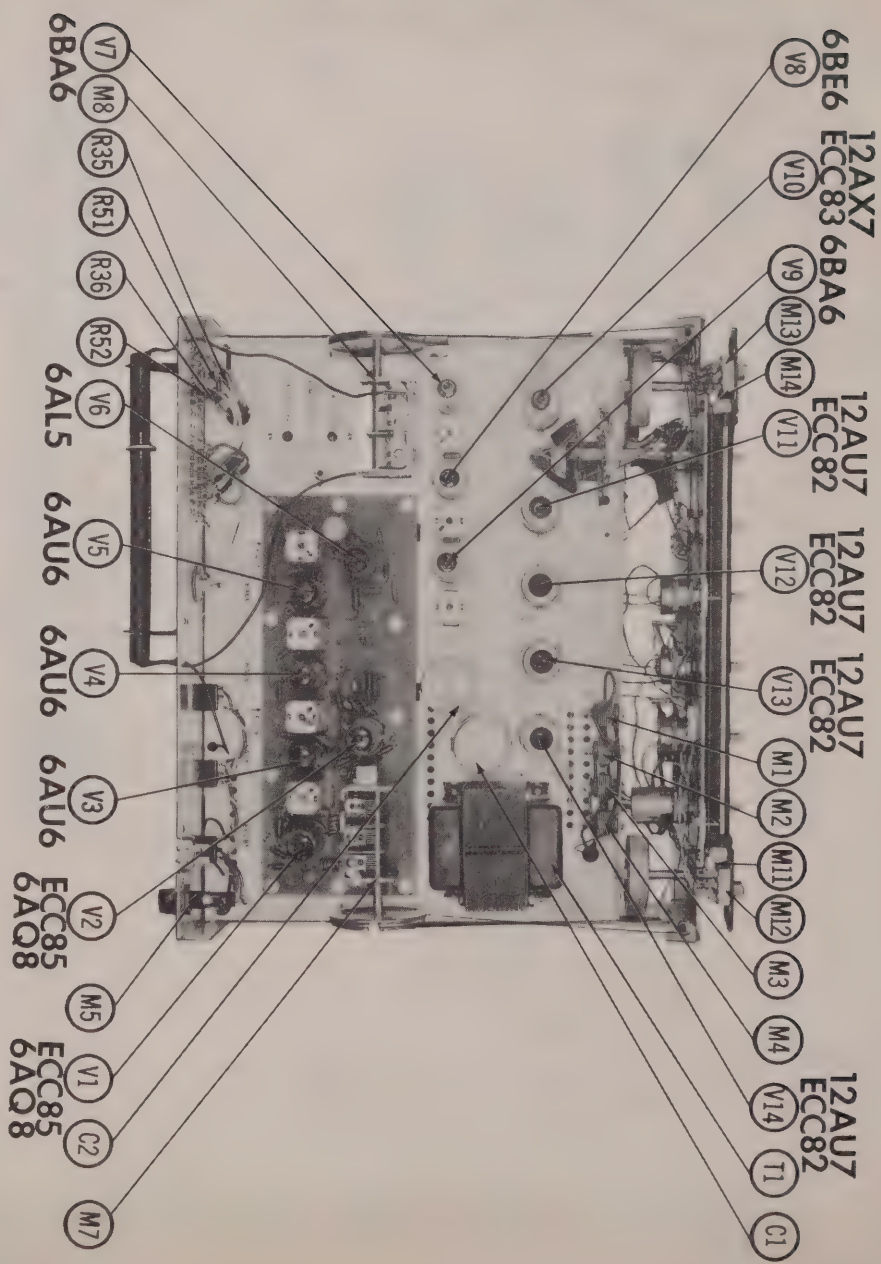
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	P2492963	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—TOP VIEW

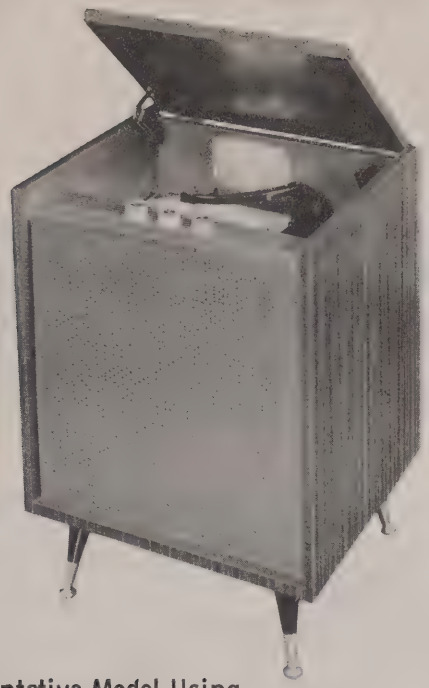


PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MAGNAVOX CHASSIS AMP-189-00

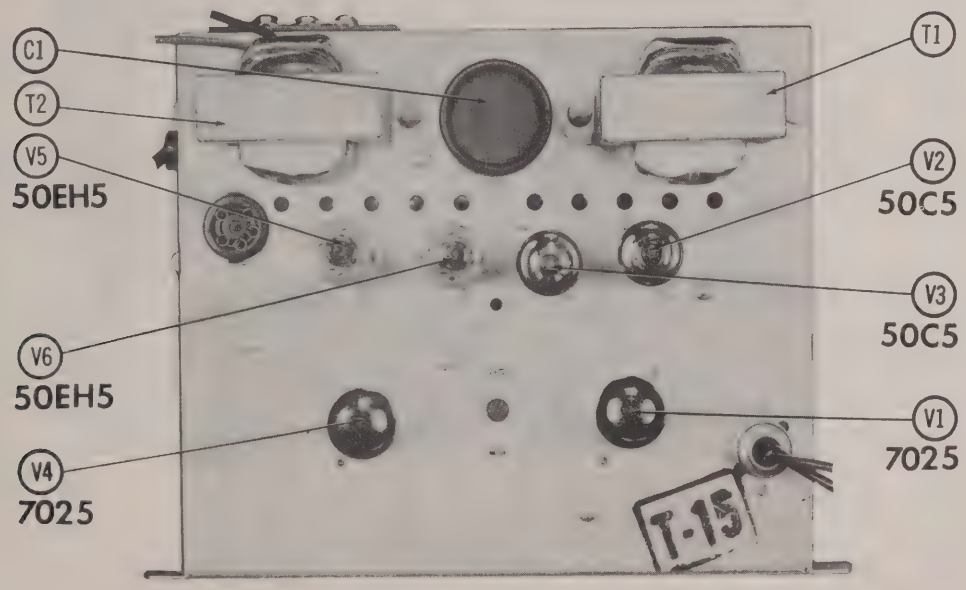
MAGNAVOX CHASSIS
AMP-189-00



Representative Model Using
Ch. AMP-189-00

TRADE NAME	Magnavox Chassis AMP-189-00
MANUFACTURER	Magnavox Co., 2131 Bueter Road, Fort Wayne 4, Indiana
TYPE SET	AC Operated 6 Tube Stereo Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 58 Watts, .62 Amp. @ 117 Volts AC

MAGNAVOX CHASSIS
AMP-189-00



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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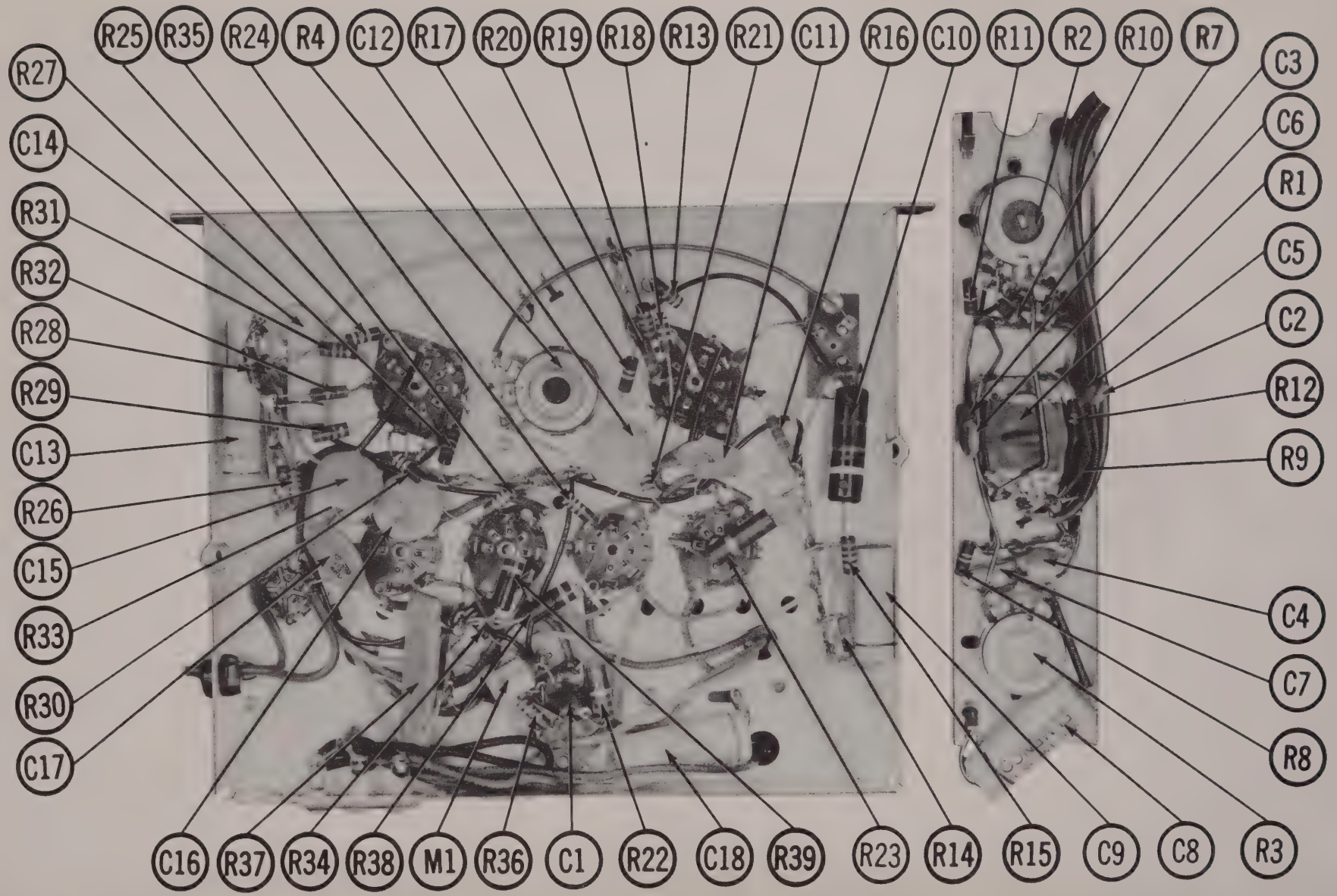
JT284

SET 458 FOLDER 12



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 1 Phase Inv.	7025	V4	Channel 2 AF Amp. - Channel 2 Phase Inv.	7025
V2	Channel 1 Output	50C5	V5	Channel 2 Output	50EH5
V3	Channel 1 Output	50C5	V6	Channel 2 Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■120	150	270023-31				TMD-15	TVLS-3447.5 *	①
B	▲40	150					TDLD-15		①
C	20	150							①

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Some versions may use 40-30-20mfd @ 150V in this application (Part #270023-24).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA MAGNAVOX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	220			250218-5	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C3	68			250218-7	BPD-000068	DD-680	L10Q68	CNO-468	5GA-Q68	
C4	2000			250218-20	BPD-002	DD-202	L10D2	B-220	5HK-D2	
C5	220			250218-5	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C6	68			250218-7	BPD-000068	DD-680	L10Q68	CNO-468	5GA-Q68	
C7	2000			250218-20	BPD-002	DD-202	L10D2	B-220	5HK-D2	
C8	.047	600		250201-11	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C9	.033	200		250202-10	P288N-033	DF-303	CUB6S33	GEM-4133	6TM-S33	
C10	.047	200		250202-11	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C11	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C12	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C13	.022	200		250202-9	P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22	
C14	.033	200		250202-10	P288N-033	DF-303	CUB6S33	GEM-4133	6TM-S33	
C15	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C16	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	10000			250218-19	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C18	.047	600		250201-11	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C19	10000	1000			BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C20	1.0	100			P288N-1.0		CUB2W1	GEM-21	2TM-M1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAGNAVOX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3.3meg*	½	220151-4	BT-180				Loudness, Channel 1
B	3.3meg*	½		STR-180				Loudness, Channel 2
R2A	1meg	½	220151-5	B-69	AD47-1meg-Z	Q13-137	† UE3913	Treble, Channel 1
B	1meg	½		SR-69	Not Req.	M13-137		Treble, Channel 2
C	Shaft			Not Req.	FS-3	Not Req.		
R3A	3meg	½	220151-6	B-85		Q13-140	† UE3971	Bass, Channel 1
B	3meg	½		SR-85		M13-140		Bass, Channe 12
R4	3meg	½	220153-1					Balance

* Taps @ 350K and 1.6meg. † "STA-LOC" Equivalent: FA16A, RU16A, C53500.
‡ "STA-LOC" Equivalent: FA36A, RU36A, C53500.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R5	2.2meg			
R6	2.2meg			
R7	100K		230104-86	
R8	220K		230104-90	
R9	100K		230104-86	
R10	100K		230104-86	
R11	220K		230104-90	
R12	100K		230104-86	
R13	470K		230104-94	
R14	27K		230104-79	
R15	68K		230104-84	
R16	680Ω		230104-60	
R17	15K		230104-76	
R18	470K		230104-94	
R19	68K		230104-84	
R20	680Ω		230104-60	
R21	470K		230104-94	
R22	680Ω	1	230104-62	Note 1

ITEM No.	RATING OHMS	RATING WATT	MAGNAVOX PART No.	NOTES
R23	120Ω	1	230105-48	Note 2
R24	470K		230104-94	
R25	470K		230104-94	
R26	33K		230104-80	
R27	68K		230104-84	
R28	680Ω		230104-60	
R29	15K		230104-76	
R30	470K		230104-94	
R31	68K		230104-84	
R32	680Ω		230104-60	
R33	470K		230104-94	
R34	47Ω		230104-46	
R35	470K		230104-94	
R36	3300Ω		230104-68	
R37	22Ω	5	240071-42	
R38	33Ω	1	230105-44	
R39	33Ω	1	230105-44	

Note 1. Some versions may use 1000Ω in this application (Part #230104-62).
Note 2. Some versions may use 68Ω 1W in this application (Part #230105-48).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.1	REPLACEMENT DATA MAGNAVOX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1 (or) T2	3700Ω CT	17Ω SEC. 2 3-4Ω	320265-3							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MAGNAVOX PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	12"	PM	5-6Ω	583994	12A6AZ5.2	
SP2	4" x 8"	PM	7-8Ω	583923		
SP3	5"	PM	3-4Ω	580038-1	5A07	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA MAGNAVOX PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.145A	530058-1 ①	CA102DA①	SD-92 ①		K200 ①	① Silicon Type.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA MAGNAVOX PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M2		13T	Not Req.	66 *	Not Req.			* Use Mount PT-3

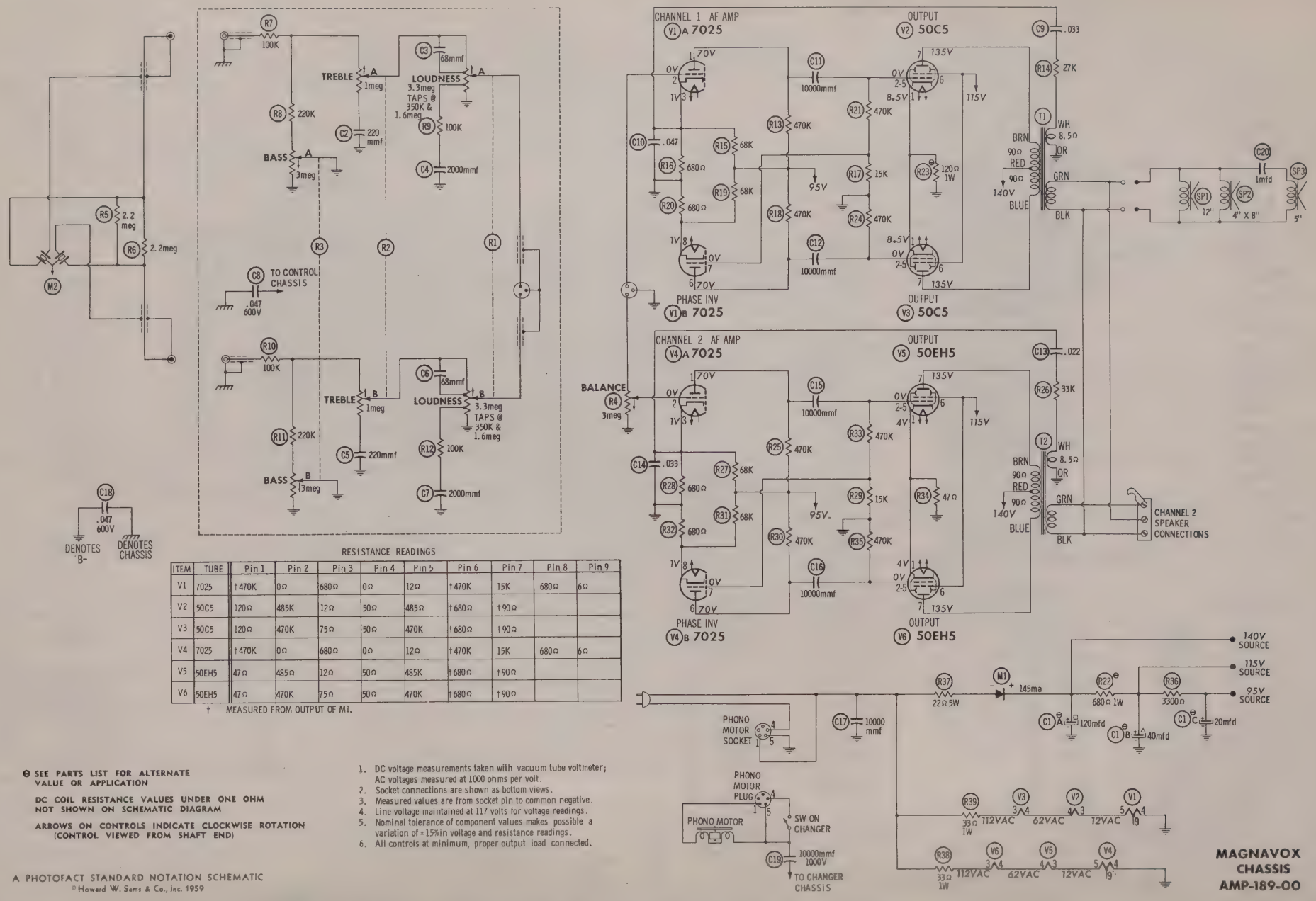
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA MAGNAVOX PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M3	(78RPM)	E98 † or E98D ◆	* W-101STS † or *W-101STD ◆ or *W-102S †	* Includes cartridge † Jewel ◆ Diamond
	(LP)	E98X † or E98XD ◆		

MAGNAVOX CHASSIS AMP-189-00

FOLDER 12



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	†470K	0Ω	680Ω	0Ω	12Ω	†470K	15K	680Ω	6Ω
V2	50C5	120Ω	485K	12Ω	50Ω	485Ω	†680Ω	†90Ω		
V3	50C5	120Ω	470K	75Ω	50Ω	470K	†680Ω	†90Ω		
V4	7025	†470K	0Ω	680Ω	0Ω	12Ω	†470K	15K	680Ω	6Ω
V5	50EH5	47Ω	485Ω	12Ω	50Ω	485K	†680Ω	†90Ω		
V6	50EH5	47Ω	470K	75Ω	50Ω	470K	†680Ω	†90Ω		

† MEASURED FROM OUTPUT OF M1.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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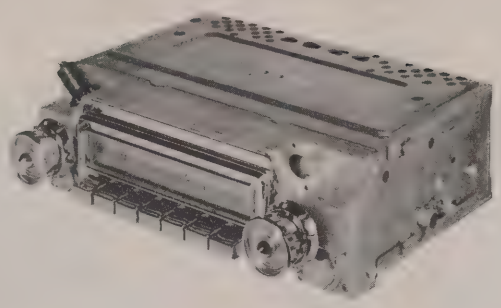
MAGNAVOX CHASSIS AMP-189-00

PHOTOFACT* Folder



TRADE NAME	Mopar Model 927 (For 1959 MS1, MS2, MS3 Desoto Automobiles)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated 5 Tube Custom Built AM Automobile Receiver With Transistorized Output
POWER SUPPLY	12 Volt Storage Battery
RATING	2 Amp. @ 12.6 Volts DC (2.8 Amp. When Seeking)
TUNING RANGE—BROADCAST	535 – 1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at mid-position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2,..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

A3, A4..... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2543, 2544

A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

A8, A9, A10, All.. GENERAL CEMENT #9050L, 9150
WALSCO #2521

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of Converter. Low side to chassis.	262.5KC (Unmod.)	High Freq. end stop.	DC probe to point (A). Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
2.	"	"	"	"	"	A4	Adjust for MINIMUM deflection.
3.	Fig. 1.	Thru dummy to antenna receptacle.	1610KC	"	OUTPUT METER Across voice coil.	A5, A6, A7	Set Volume for maximum. Adjust A5, A6 and A7 for maximum output.
	Step 4 is not necessary unless tuner has been tampered with or associated components have been replaced. Back tuning cores A8, A9 and A10 out of coils. Repeat Step 3.						
4.	Fig. 1.	"	1020KC	Carriage 49/64" from high end stop.	"	A8, A9, A10	Adjust for maximum output. Repeat Steps 3 & 4.
5.	"	"	1925KC	1400KC	"	A11	Adjust for MINIMUM output.

With radio installed in car and antenna fully extended, tune in a weak station near 1100KC and adjust A7 for maximum output. With radio tuned to a 1000KC signal, adjust pointer adjustment so that pointer coincides with 1000KC mark on dial.

PUSH BUTTON ADJUSTMENT

1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

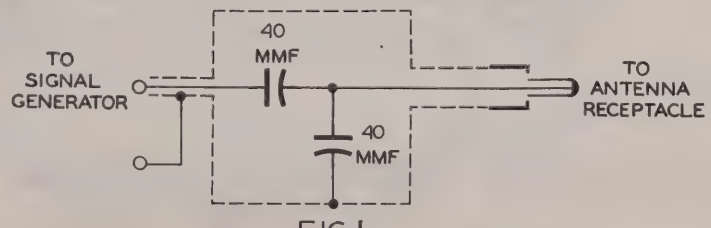


FIG. 1

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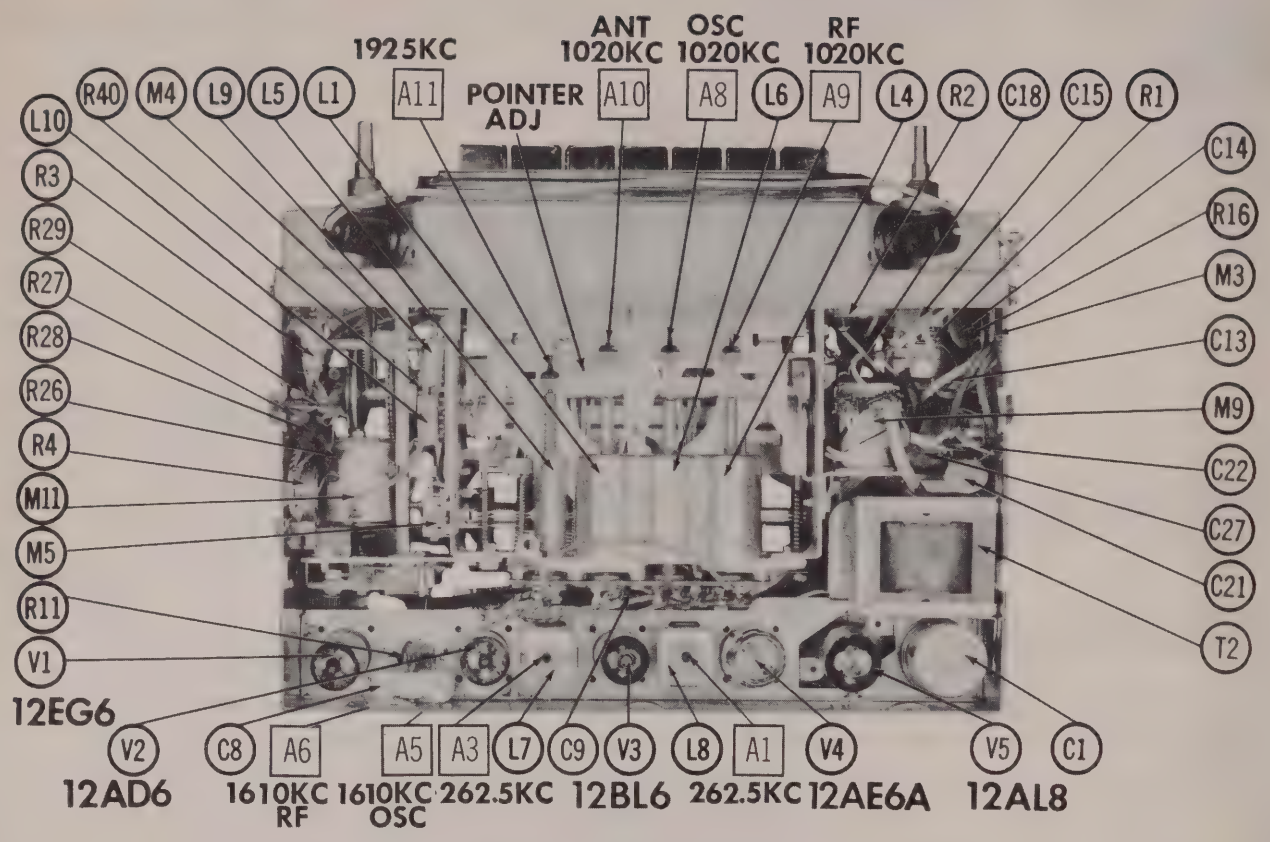
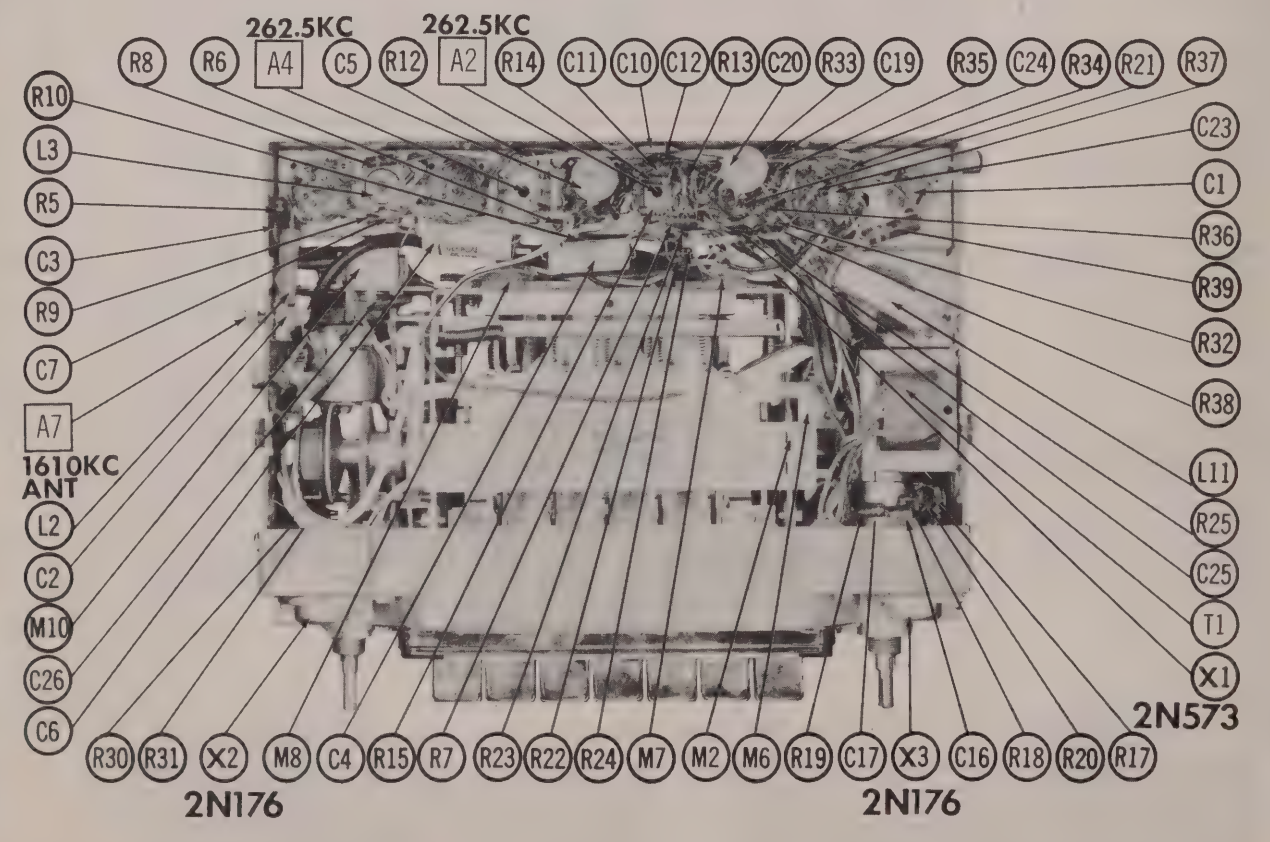
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JD257

MOPAR MODEL
927
MOPAR MODEL
927
SET 458 FOLDER 13



CHASSIS-TOP VIEW



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12EG6	V4	Det.-AVC-AF Amp.	12AE6A
V2	Converter	12AD6	V5	Trigger-Relay Control	12AL8
V3	IF Amplifier	12BL6			

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N573	Driver			2N573		PNP
X2	2N176	Output	2N155	2N176		2N176	PNP Note 1
X3	2N176	Output	2N155	2N176		2N176	PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #11M490487) or equivalent to both sides of insulator.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲500	16	23B539261	AFH2-02-10	B0045	WP200.5	TMD-109	TVL-2175	
B	▲100	16							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	18-115			20K542026						
C3	100		N750 10%	21R410036	N750-DI 100	DTN-100	C10T1U	CN7-310	5TCU-T1S 10%*	
C4	.05	200		8R121005	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C5	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C6	.05	200		8R121005	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C7	4.7			21R115954	NPO-SI 4.7	TCZ-4R7	C10V47C	ZT-5547	5TCCB-V47	
C8A	26-50									
B	47			20B539612						
C	120-210									
C9	100		N220 5%							①
C10	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C11	1.5			21R115959	NPO-SI 1.5	TCZ-1R5	C10V15C	ZT-5515	5TCCB-V15	
C12	100		N750 10%	21R410036	N750-DI 100	DTN-100	C10VT1U	CN7-310	5TCU-T1S 10%*	
C13	100		N750 10%	21R410036	N750-DI 100	DTN-100	C10VT1U	CN7-310	5TCU-T1S 10%*	
C14	3300			21R120422	DI-3300	DD-332	BYA10D33	B-233	5HK-D33	
C15	50000			21A542384	BPD-05	DF-503	H-05S5	TA-150	5HK-S5	②
C16	270		N2200 10%	21R121481						
C17	800		10%	21R124802	DI-800			JL-382	5GA-T8S 10%*	
C18	1500			21R125986	BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	
C19	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C20	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C21	50000			21A542384	BPD-05	DF-503	H-05S5	TA-150	5HK-S5	
C22	50000			21A542384	BPD-05	DF-503	H-05S5	TA-150	5HK-S5	
C23	470			21R114554	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C24	10000			21R121946	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C25	100		N750 10%	21R410036	N750-DI 100	DTN-100	C10T1U	CN7-310	5TCU-T1S 10%*	
C26	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C27	50000			21A542384	BPD-05	DD-503	H-05S5	TA-150	5HK-S5	

① Some versions may use 100mmf N750 in this application (Part #21R410036).
② Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	Switch		18B561343					Tone
B	2 meg	½					■ UE4019-S	Volume, Tap@1meg
C	Switch							Power Off-On
R2	200Ω †	1(WW)	18K561568		39-200 *			Level Sensitivity (Note 1)
R3	3000Ω	1(WW)	18K561281				PFL3K	Sensitivity (Normal)
R4	400Ω ▲	1(WW)	18B541877					Balance

* Use 30Ω resistor in series with terminal.

■ "STA-LOC" equivalent: TS-12, RU26T125, OS1687, IS2250, US-42

Note 1. Some versions may use 500Ω, with 50Ω stop, in this application with same part #.

† Stop@30Ω

▲ Stops@120Ω each end.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R5	6.8meg		6K121933	
R6	6.8meg		6K121933	
R7	1.5meg		6R6460	
R8	10K			
R9	12K		6K119933	
R10	6.8meg		6K121933	
R11	47K		6K121299	
R12	3.3meg		6K121278	
R13	8.2meg		6R5585	
R14	2.2meg		6K127001	
R15	47K		6K121299	
R16	330K		6K128227	
R17	1meg		6K124494	
R18	2.2meg		6K127001	
R19	1.5meg		6R6460	
R20	1.5meg		6R6460	
R21	10meg		6K125911	
R22	8200Ω		6K119931	

Note 1. Not used in some versions.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R23	120Ω		6K128226	
R24	330Ω		6K127940	
R25	1000Ω			Note 1.
R26	10Ω Cold		6K540634	
R27	.33Ω		17K542316	
R28	10Ω Cold		6K540634	
R29	.33Ω		17K542316	
R30	4.7Ω		17K77629	
R31	4.7Ω		17K77629	
R32	6.8meg		6K121933	
R33	560K		6K128228	
R34	1.5meg		6R6460	
R35	15K		6K119934	
R36	560Ω		6K122802	
R37	4.7meg		6K121277	
R38	3300Ω		6R6036	
R39	47Ω	1	6R118209	
R40	47Ω	2	6R488035	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		MOTOROLA PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil	24C536308						
L2	Ant. Coil	24A532148	19-3036	19-3036	TV-180	6176	VP-1	33uh
L3	RF Choke	24C561809	19-1040	19-1040	BC-513	4662		1.03MH
L4	RF Coil	24C536308						
L5	Image Trap Coil	24K542330						
L6	Osc. Coil	24B536300						
L7	Input IF Trans.	24K561390	16-6752	16-6752	BC-350	12-H1	RF-3	
L8	Output IF Trans.	24B533073	16-6754	16-6754	BC-354	12-H6		
L9	RF Choke	24A542379						
L10	RF Choke	24A542379						

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L11	2A	.25Ω	.004 HY	25K561409						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	12	1	25K561410						
		SEC. 2							
	12	1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	30Ω CT	3-4Ω	25C561411							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5½x 7½"	PM	3-4Ω	50K560421		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7.5A 32V	65R122346	9K561595	30307.5 (SFE 7½A 32V)	155009	SFE 7½	HHH

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77E561031	(ST-248) Complete
M3	Spark Plate	48K539953	Selenium
M4	Switch	40B561476	Rear Speaker
M5	Switch	40B535396	Reversing
M6	Switch	40A535418	Sensitivity
M7	Switch	40A562348	Search, Distant
M8	Switch	40A562348	Search, Local
M9	Relay	80K541296	
M10	Solenoid	59A537563	
M11	Motor	59C561888	

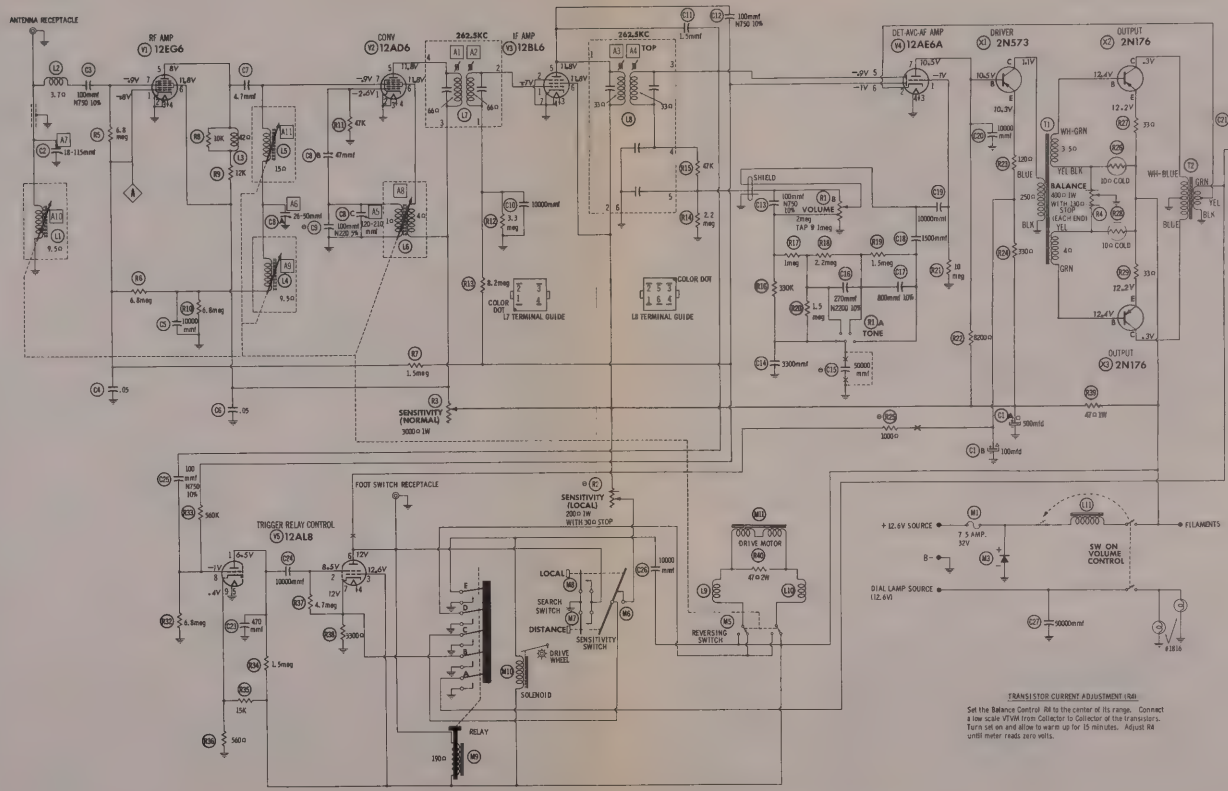
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36C560822	Tuning-Volume
Knob	36C560820	Tone-Rear Speaker
Pushbutton	1C560986	
Pushbutton	1K560988	Distant Search
Pushbutton	1K560987	Local Search
Pointer	1K560980	
Dial Scale	34B560819	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12EG6	4.5meg	0Ω	0Ω	1.5Ω	†13K	†2000Ω	10meg		
V2	12AD6	47K	0Ω	0Ω	1.5Ω	†1000Ω	†1000Ω	5meg		
V3	12BL6	3.3meg	0Ω	1.5Ω	0Ω	†80Ω	†47Ω	0Ω		
V4	12AE6A	10meg	2Ω	1.5Ω	0Ω	1meg	3.8meg	†		
V5	12AL8	†1.5meg	4.7meg	†0Ω	1.5Ω	0Ω	†190Ω	330Ω	3.8meg	560Ω

† TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

† MEASURED FROM JUNCTION OF R39 AND L11.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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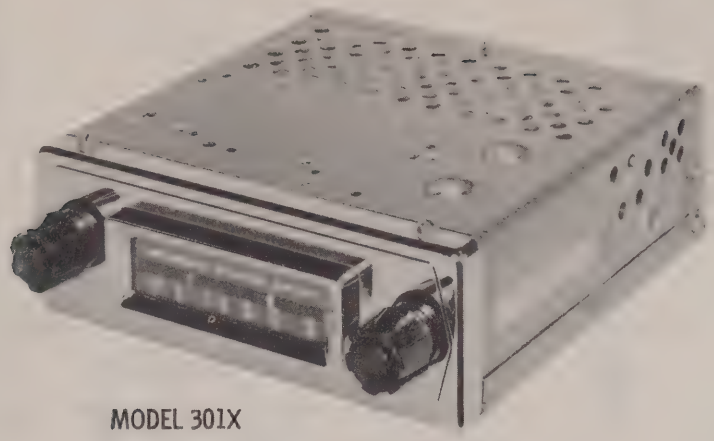
MOPAR MODEL 927

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

**MOTOROLA MODELS
300X, 301X**



MODEL 301X

TRADE NAME	Motorola Models 300X, 301X
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated 3 Tube Universal Type AM Automobile Receiver With Transistorized Output
POWER SUPPLY	12 Volt Storage Battery
RATING	2 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	540 — 1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A3, A4..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

A5, A6, A7..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2522, 2523, 2525, 2537

A8, A9, A10..... GENERAL CEMENT #9050L, 9150
WALSCO #2521

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side thru .1mfd to antenna receptacle. Low side to chassis.	262.5KC (400~ Mod.)	High Freq. end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1620KC	"	"	A5, A6, A7	"
	It is not necessary to perform the following steps unless the tuning coils have been tampered with or replaced. Back the tuning cores (A8, A9 and A10) out of the coils as far as possible. Repeat Step 2.						
3.	Fig. 1	Thru dummy to antenna receptacle.	1200KC	Tuner carriage 9/32" from high end stop.	Across voice coil	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3 until no further increase is noted. Make Step 2 the last step.
	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.						

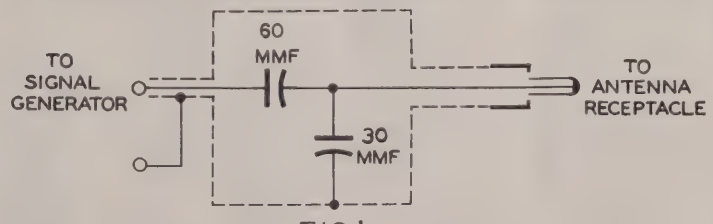


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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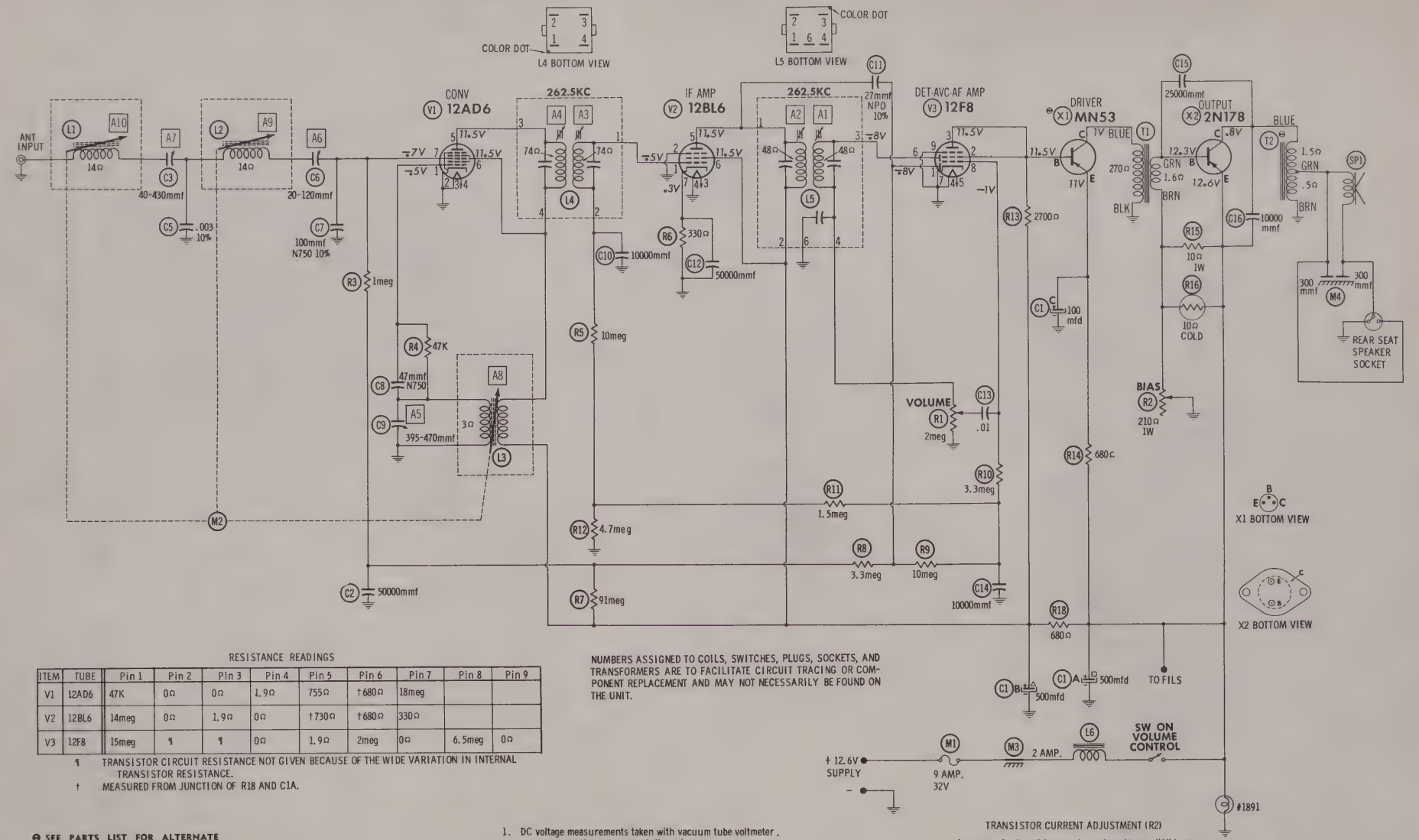

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AD6	47K	0Ω	0Ω	1.9Ω	755Ω	†680Ω	18meg		
V2	12BL6	14meg	0Ω	1.9Ω	0Ω	†730Ω	†680Ω	330Ω		
V3	12F8	15meg	¶	¶	0Ω	1.9Ω	2meg	0Ω	6.5meg	0Ω

¶ TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

† MEASURED FROM JUNCTION OF R18 AND C1A.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRANSISTOR CURRENT ADJUSTMENT (R2)

Connect a 0-3Amp DC meter in series with the "A" lead. Remove the Output Transistor from its socket. Turn the radio on and set the applied voltage at 12.6 volts. Note the current reading obtained on the meter. Replace the transistor back in its socket and recheck the applied voltage for 12.6 volts. Adjust Bias Control R2 to obtain a current reading of 360ma higher than previously obtained.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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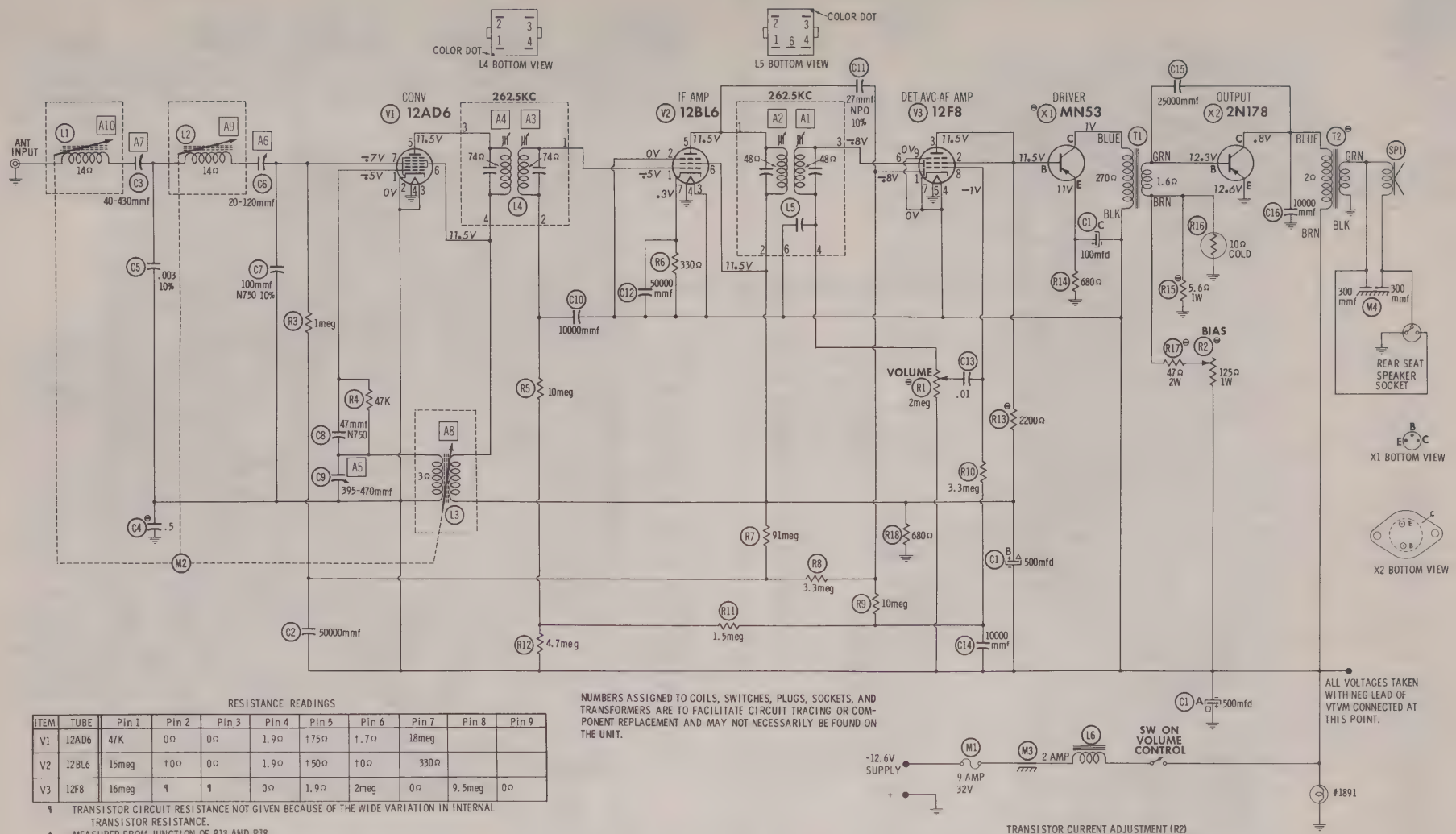
MOTOROLA MODELS 300X, 301X

SCHEMATIC - MODEL 300X



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AD6	47K	0Ω	0Ω	1.9Ω	†75Ω	†.7Ω	18meg		
V2	12BL6	15meg	†0Ω	0Ω	1.9Ω	†50Ω	†0Ω	330Ω		
V3	12F8	16meg	¶	¶	0Ω	1.9Ω	2meg	0Ω	9.5meg	0Ω

¶ TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

† MEASURED FROM JUNCTION OF R13 AND R18.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRANSISTOR CURRENT ADJUSTMENT (R2)

Connect a 0-3 amp. DC meter in series with the "A" lead. Remove the Output Transistor from its socket. Turn the radio on and set the applied voltage at 12.6 volts. Note the current reading obtained on the meter. Replace the transistor back in its socket and recheck the applied voltage for 12.6 volts. Adjust Bias Control R2 to obtain a current reading of 360 MA higher than previously obtained.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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MOTOROLA MODELS 300X, 301X

SCHEMATIC - MODEL 301X

PARTS LIST AND DESCRIPTIONS

TUBES

• CBS •	GENERAL ELECTRIC •	RAYTHEON •	SYLVANIA •

ITEM No.	USE	TYPE
V1	Converter	12AD6
V2	IF Amplifier	12BL6
V3	Det. -AVC-AF Amp.	12F8

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	MN53 *	Driver			MN53		PNP
X2	2N178	Output		2N176		2N235A	PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #11M490489) or equivalent, to both side of insulator.
* Some versions may use a 2N652 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■500	16	23B543279	AFH3-00-95		WP300.85		TVLS-3026.8*	
B	▲500	16							
C	100	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	50000			21A542384	BPD-05	DDA-503	H-05S5	TA-150	TG-S50	
C3	40-430			20K542456						
C4	.5	100		8K122076	V84C2P47		ST2P5	GEM-205	2TM-P5	①
C5	.003	200	10%	8K74091 1				GTM-2233	5BF-D33	
C6	20-120			20K541014						
C7	100		N750 10%	21R410036	N750-DI 100	DTN-100	C10T1U	CN7-310	5TCU-T1S 10%*	
C8	47		N750	21R115593	N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47	
C9	395-470			20A485708						
C10	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C11	27		NPO 10%	21R410089	NPO-DI 27	TCZ-27	C10Q27C	CNO-427	5TCC-Q27S 10%*	
C12	50000			21A542384	BPD-05	DDA-503	H-05S5	TA-150	TG-S50	
C13	.01	200		8R121866	P288N-01	D6-103	CUB4S1	GEM-411	4TM-S1	

CAPACITORS (cont)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C14	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C15	25000			21K740806			ST6S25	GEM-4125	5HK-S25	
C16	10000			21R482726	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in Model 300X

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	18B543388					Volume Note 1
B	Switch							Off-On
R2	125Ω	1(WW)	18A542810					Bias Note 2

Note 1. Some versions may use 2meg volume and switch, Part #18K543803.
Note 2. Model 300X uses 210Ω 1½W in this application (Part #18K543400).
Some versions of Model 301X may use alternate part #18K543397.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R3	1meg		6K122324	
R4	47K		6K121687	
R5	10meg		6K119408	
R6	330Ω		6K6023	
R7	91meg		6K538716	
R8	3.3meg		6K119407	
R9	10meg		6K125911	
R10	3.3meg		6K119407	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R11	1.5meg		6R6460	
R12	4.7meg		6K121277	
R13	2200Ω			Note 1
R14	680Ω		6R6040	
R15	5.6Ω	1	6A488139	Note 2
R16	10Ω Cold		6K540634	
R17	47Ω	2	6R127673	Note 3
R18	680Ω		6R6040	

Note 1. Some versions may use 2700Ω in this application (Part #6K119926).
Note 2. Model 300X uses 10Ω in this application (Part #6K124668).
Note 3. Not used in Model 300X.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		MOTOROLA PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Tuning Coil	24K562246 †						
L2	RF Tuning Coil	24K562245 †						
L3	Osc. Coil	24K562244 †						
L4	Input IF	24B543286	16-6752	16-6752	BC-350	12-H2	RF-3	
L5	Output IF	24K543287	16-6754	16-6754	BC-354	12-H6		

† Part of Tuner M2 Part #77D562242 (MT-262) or Part #77K563073 (MT-300).
Includes Ant. & RF Iron Cores Part #76B560435 & Osc. Iron Core Part #76K536534.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L6	2A	.6Ω	.001 HY	25K542487						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	20	1	25K543341						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	22Ω	3-4Ω	25C543445 ①							① Model 300X uses Part #25C543443

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	50C543476	5A15	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	9A 32V	65R16248	1V541705	307009. (SFE 9A 32V)	155009	SFE9	HDH

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D562242	MT-262, Complete
	Tuner	77K563073	MT-300, Complete
M3	Spark Plate	64K530177	
M4 A	Spark Plate	21A522033	300mmf
B	Spark Plate		300mmf

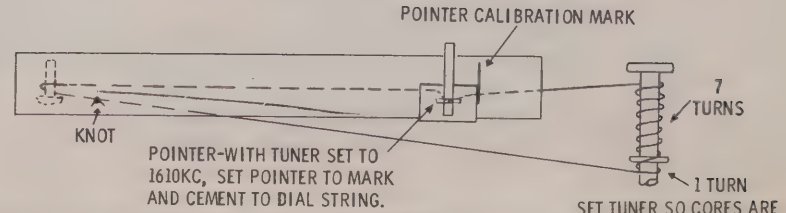
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

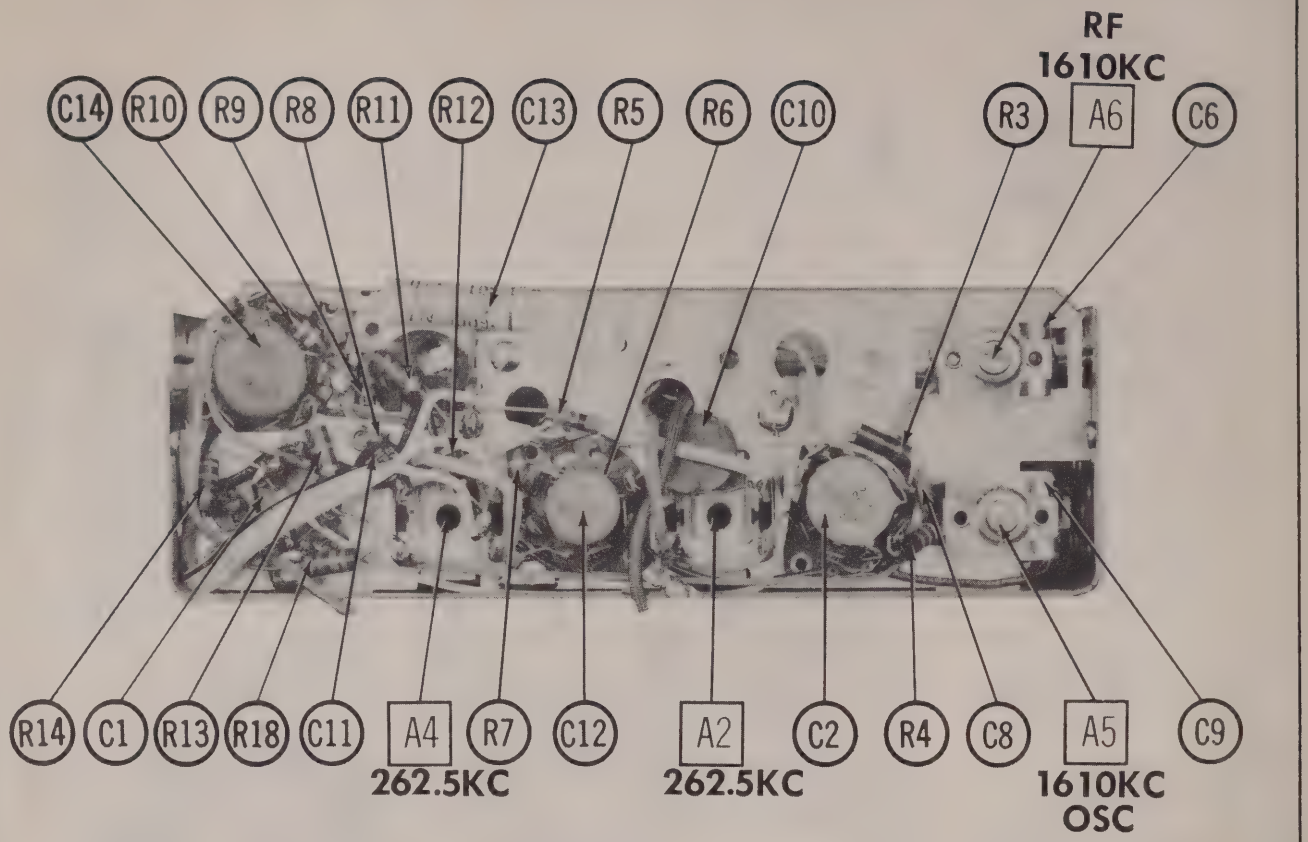
NAME	PART NO.	DESCRIPTION
Knob	36B543382	Tuning, Volume-On-Off
Bottom Cover	15C543237	
Pointer	1K543277	
Dial Scale	34B543390	

WIRING DATA

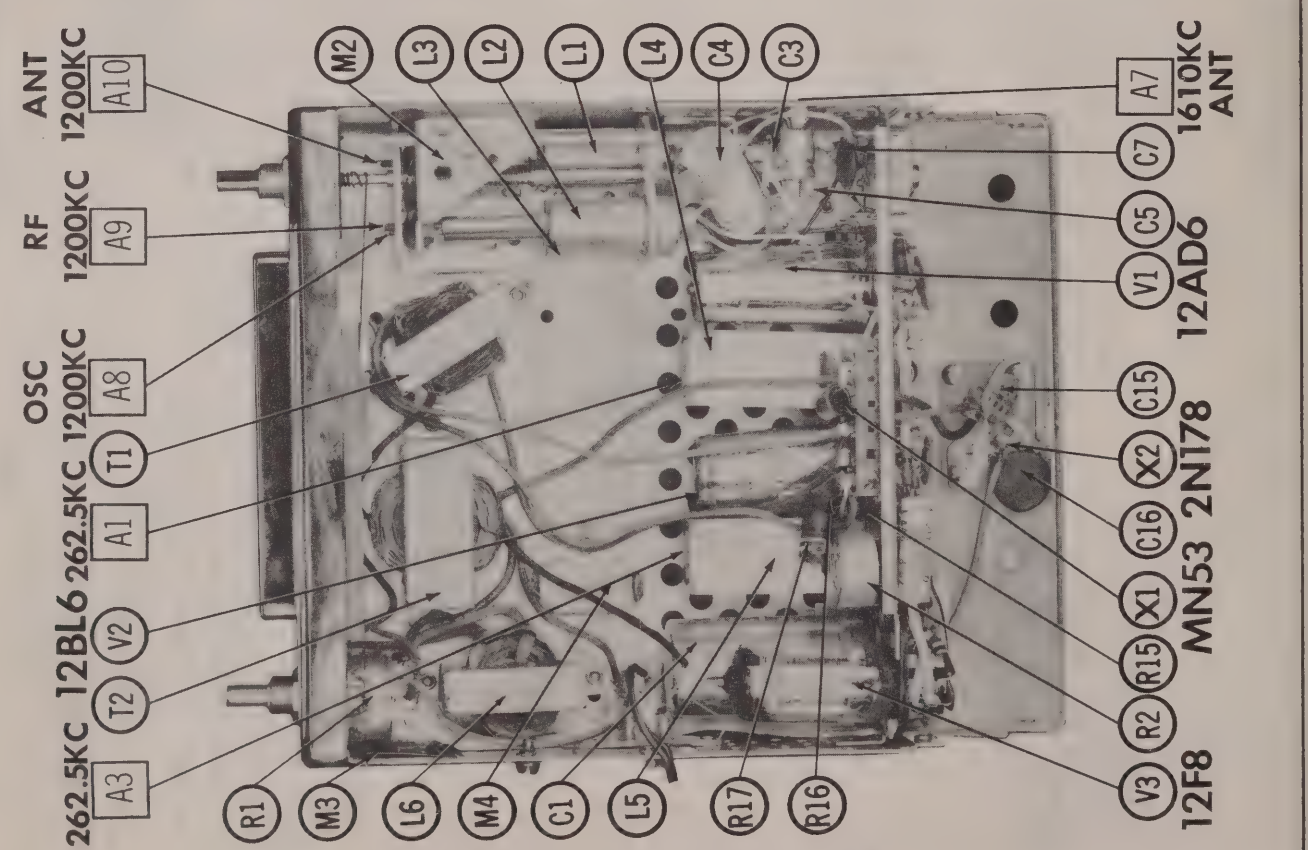
General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661


POINTER CALIBRATION MARK
KNOT
POINTER-WITH TUNER SET TO 1610KC, SET POINTER TO MARK AND CEMENT TO DIAL STRING.
7 TURNS
1 TURN
SET TUNER SO CORES ARE OUT OF COILS (1610KC)

DIAL CORD STRINGING



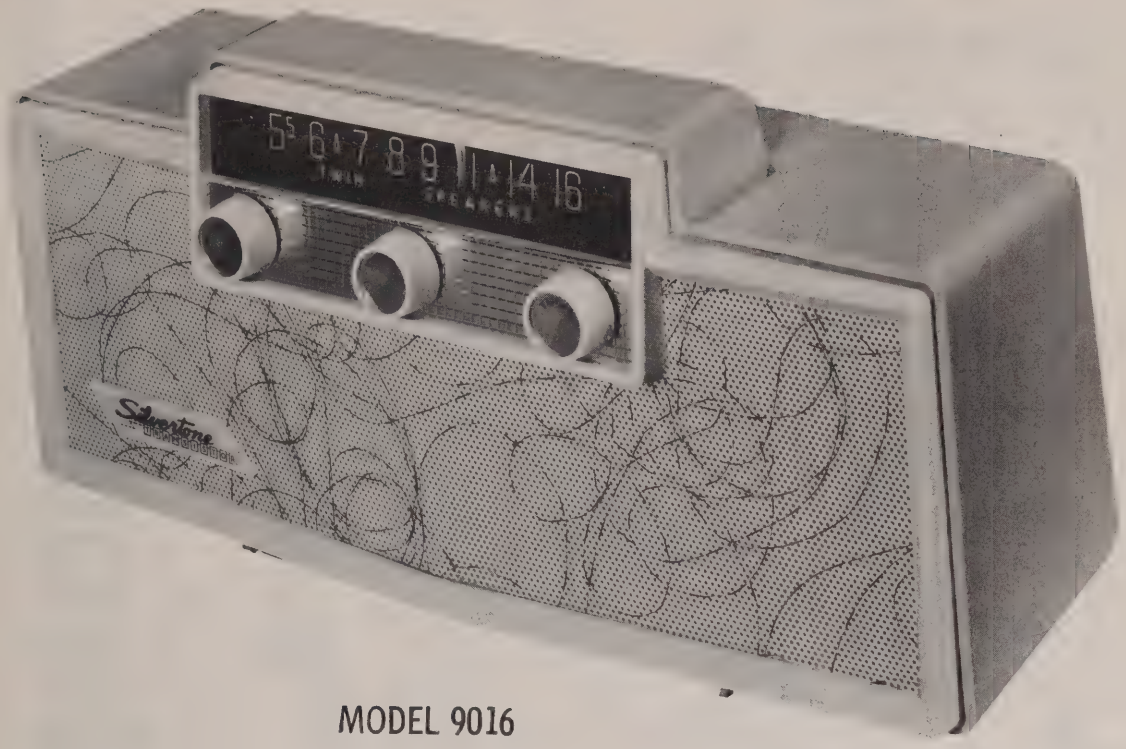
CHASSIS - END VIEW



CHASSIS - TOP VIEW

PHOTOFACT* Folder with CIRCUITRACE*

SILVERTONE MODELS 9014, 9015, 9016 (Ch. 132.45700)



MODEL 9016

TRADE NAME	Silvertone Models 9014, 9015, 9016 (Ch. 132.45700)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Battery Operated Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
RATING	6.6MA @ 9 Volts DC (No Signal, Min. Volume) 9.5MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535-1630KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A3, A4..... GENERAL CEMENT #5009, 8195, 8274, 8728, 8987, 8275
WALSCO #2531

A6..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

A5, A7..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1630KC	"	"	A5	"
3.		"	600KC	"	"	A6	"
4.		"	1400KC	"	"	A7	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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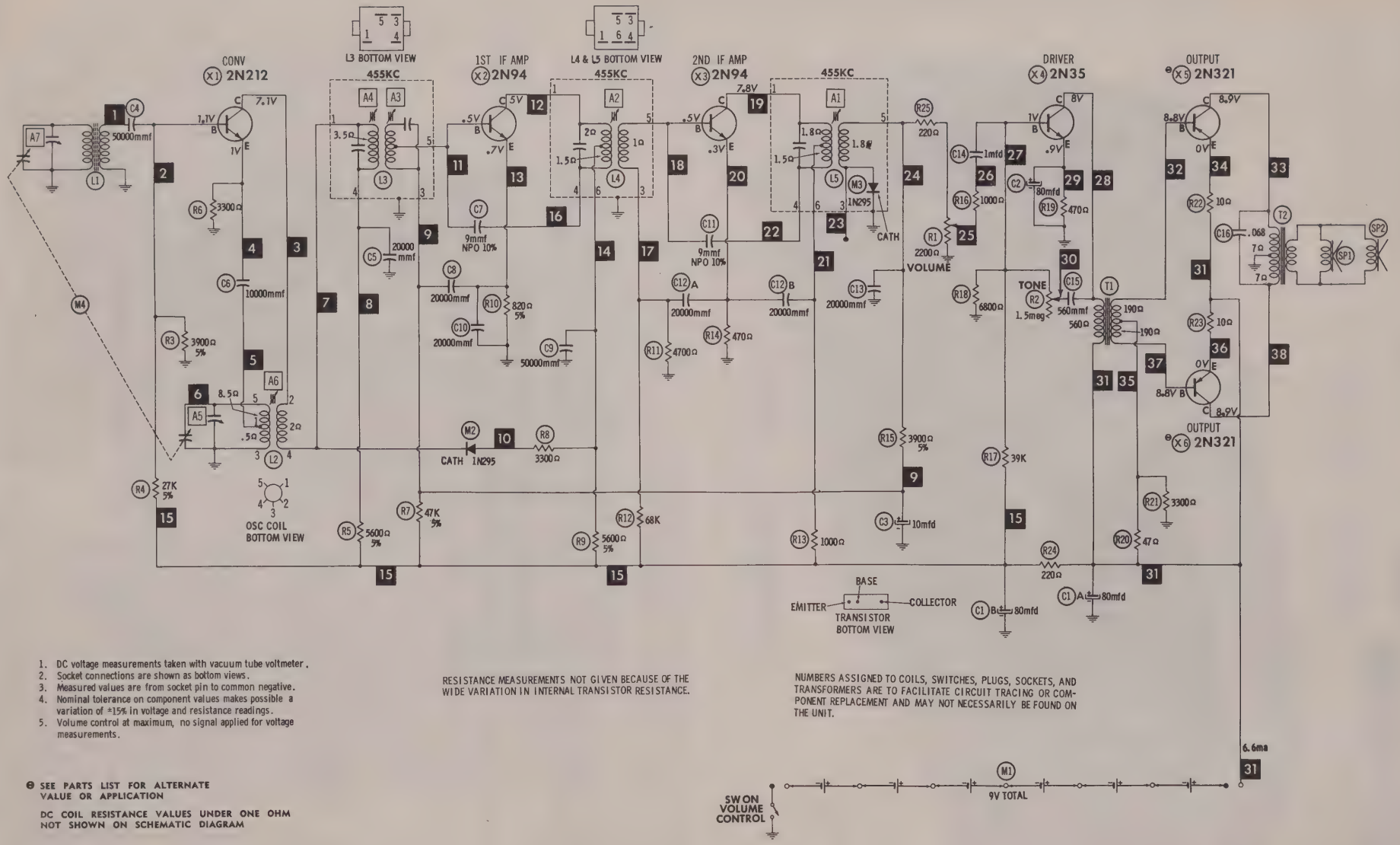
SET 458 FOLDER 15



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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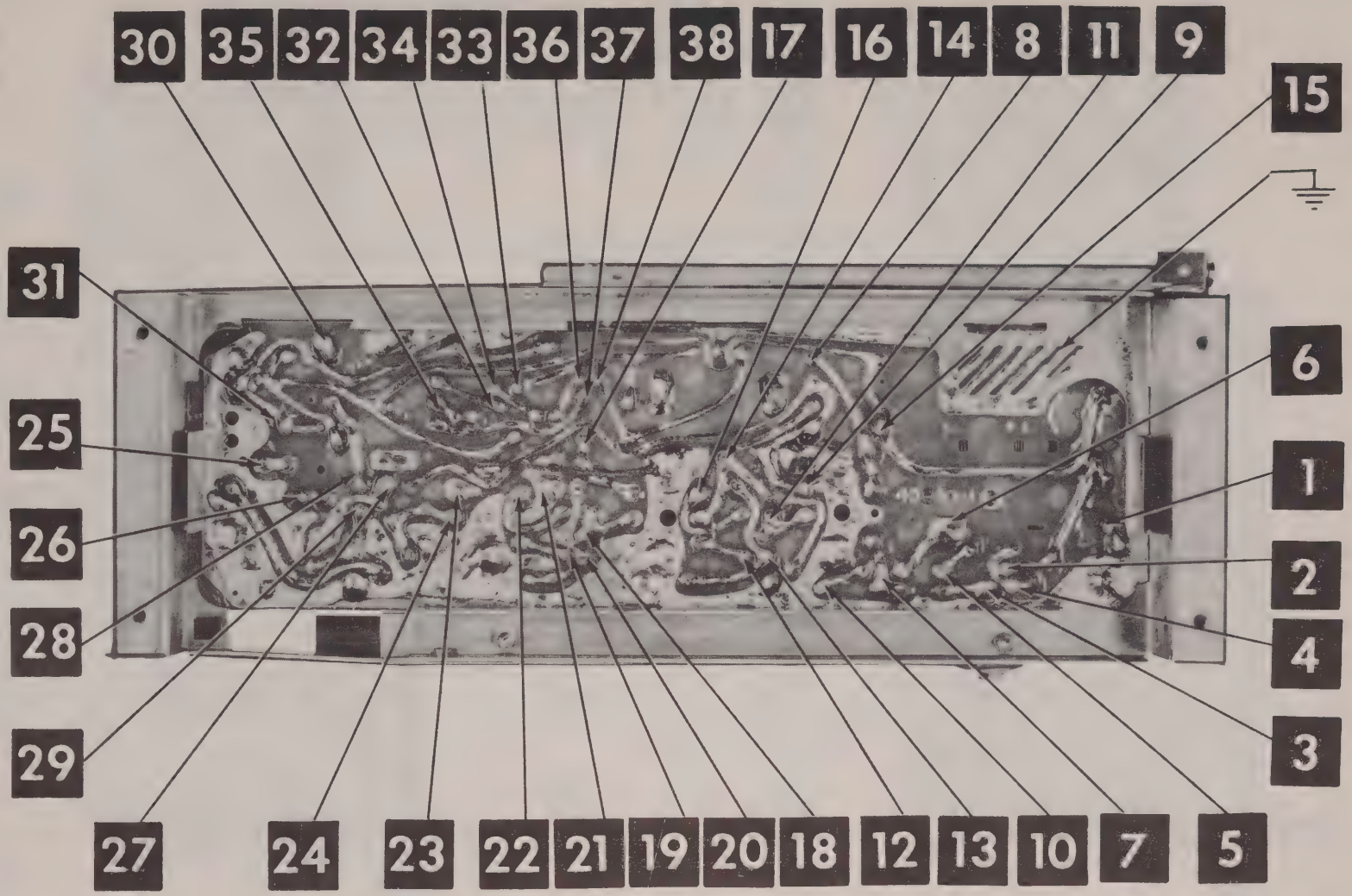
SILVERTONE MODELS 9014, 9015, 9016 (Ch. 132.45700)



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PRINTED BOARD

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N212	Converter	2N439			2N212	NPN
X2	2N94	1st IF Amplifier	2N438			2N94	NPN
X3	2N94	2nd IF Amplifier	2N438			2N94	NPN
X4	2N35	Driver	2N439			2N35	NPN
X5	2N321①	Output		2N270	2N360	2N321	PNP
X6	2N321①	Output		2N270	2N360	2N321	PNP

① Alternates 2N383, 2N270

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Silvertone PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2200Ω	½	44500-8					Volume
B	Switch							Push-Pull
R2A	1.5meg	½	44500-9	B-76	A47-2meg-Z	B13-138	U55	Tone
B	Shaft			Not Req.	FS-3	SK-1	Not Req.	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Silvertone PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	80	12	44397-3	BCD10X8080	EC100-10	TT15X100	ML100-15	TE-1134	
B	80	12			EC100-10	TT15X100	ML100-15	TE-1134	
C2	80	10	44396-5	PWE10100	EC100-10	TC492	ML100-15	TE-1119.3	
C3	10	10	44396-4	PWE10010	EC10-10	TT12X10	ML10-15	TE-1114	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Silvertone PART No.	NOTES
	OHMS	WATT		
R3	3900Ω 5%		44052-392	
R4	27K 5%		44052-273	
R5	5600Ω 5%		44052-562	
R6	3300Ω		43689-332	
R7	47K 5%		44052-473	
R8	3300Ω		43689-332	
R9	5600Ω 5%		44052-562	
R10	820Ω 5%		44052-821	
R11	4700Ω		43689-472	
R12	68K		43689-683	
R13	1000Ω		43689-102	
R14	470Ω		43689-471	

ITEM No.	RATING		Silvertone PART No.	NOTES
	OHMS	WATT		
R15	3900Ω 5%		44052-392	
R16	1000Ω		43689-102	
R17	39K		43689-393	
R18	6800Ω		43689-682	
R19	470Ω		43689-471	
R20	47Ω		43689-470	
R21	3300Ω		43689-332	
R22	10Ω		43689-100	
R23	10Ω		43689-100	
R24	220Ω		43687-221	
R25	220Ω		20061-221	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Silvertone PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	50000			43674-9	BPD-05	DA-503	H-05S5	TA-150	TG-S50	
C5	20000			43674-13	BPD-02	DA-203	H-05S2	TA-120	TG-S20	
C6	10000			44684-14	BPD-01	DM-103	H-05S1	TA-110	TG-S10	
C7	9		NPO 10%	43957-3			C10V9C			
C8	20000			43674-13	BPD-02	DA-203	H-05S2	TA-120	TG-S20	
C9	50000			43674-9	BPD-05	DA-503	H-05S5	TA-150	TG-S50	
C10	20000			43674-13	BPD-02	DA-203	H-05S2	TA-120	TG-S20	
C11	9		NPO 10%	43957-3			C10V9C			
C12A	20000			44684-4	BPD2-02	DA-203	H-05S2	TA-120	TG-S20	
B	20000					DA-203	H-05S2	TA-120	5HK-282	
C13	20000			43674-13	BPD-02	DA-203	H-05S2	TA-120	TG-S20	
C14	1mfd			44684-9						
C15	560			43674-12	DI-560	DD-561	L10T56	B-356	5GA-T56	
C16	.068	100		43955-6	P288N-068		BC2S68J	GTM1168	65P62352	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Silvertone PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	45534-10						
L2	Osc. Coil	45783-3						
L3	1st IF Trans.	44674						
L4	2nd IF Trans.	44675						
L5	3rd IF Trans.	45900-1						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Silvertone PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1, 2	1	44672						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Silvertone PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	260Ω CT	3-4Ω	44671-1	TR-22 ①			TA-40①	TR-22 ①	TY-57X①	① Bend ears down or use original frame.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Silvertone PART No.	QUAM PART No.	
SP1	4"	PM	6-8Ω	45916	4A07	
SP2	4"	PM	6-8Ω	45916	4A07	

BATTERIES

ITEM No.	VOLTAGE	Silvertone PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	6445 ①		2R①		950①		M-13R①	① 6 Used

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Silvertone PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N295	43959	1N60	1N295	Overload (Pigtail)
M3	1N295	43959	1N60	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Silvertone PART No.	NOTES
M4	Tuning Cap.	45039-2	2 Gang

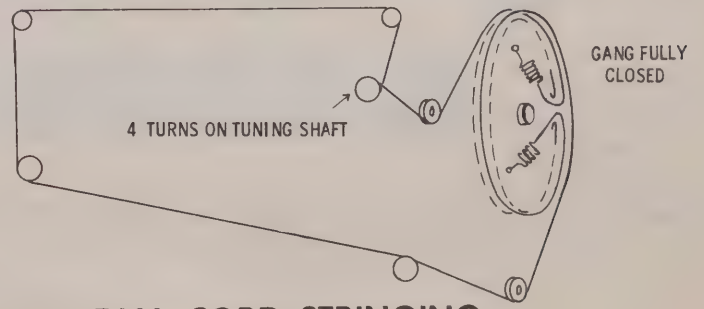
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	45827-67	Tuning
Knob	45829-67	Volume-On-Off
Knob	45828-67	Tone
Cabinet Front	45858-67	Assembly, Ivory, Includes Dial Crystal And Insert
Cabinet Back	45765-48	Brown, Model 9014
Cabinet Back	45765-17	Ivory, Model 9015
Cabinet Back	45765-45	Ming Blue, Model 9016
Pointer	45850-1	

WIRING DATA

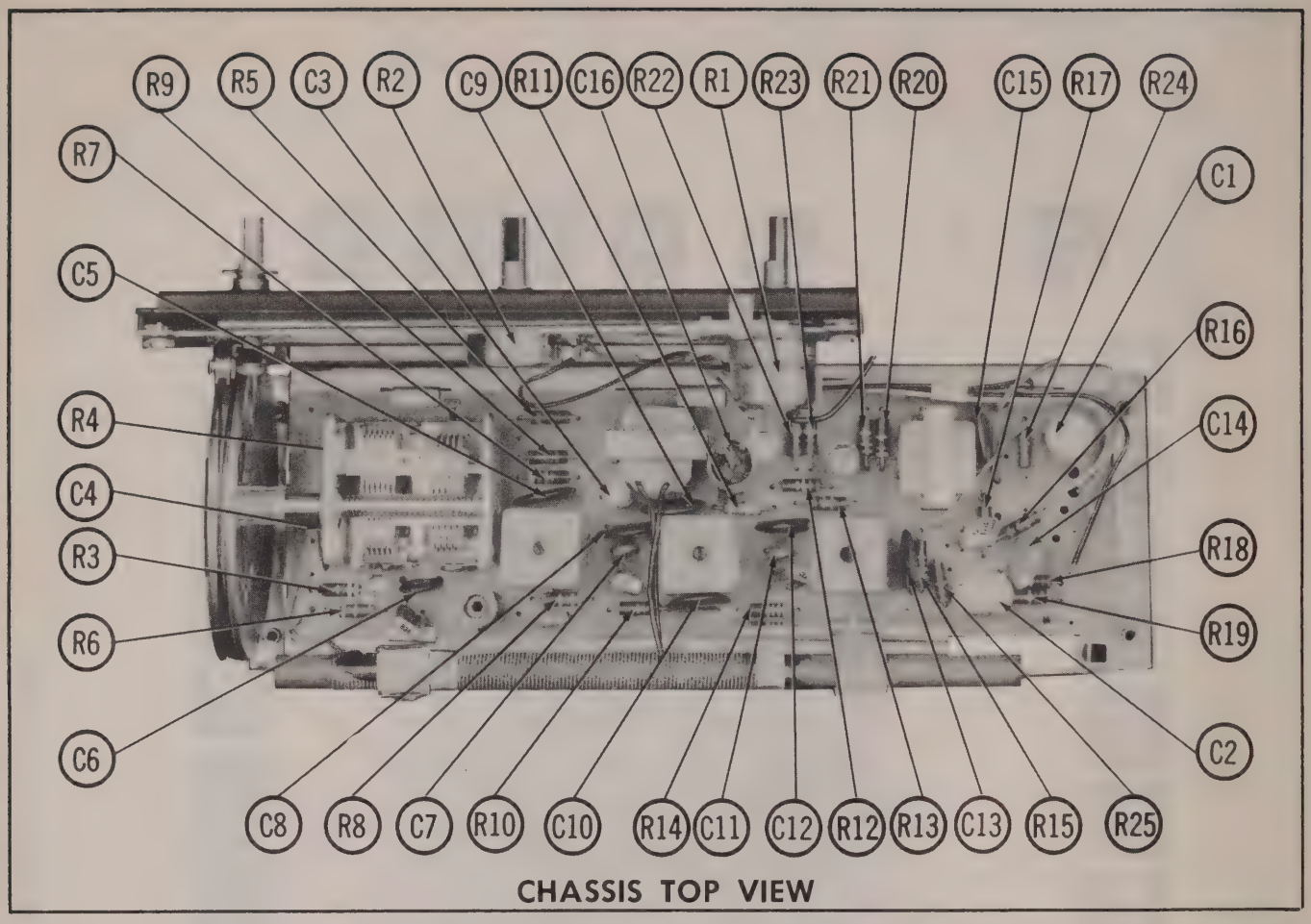
General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



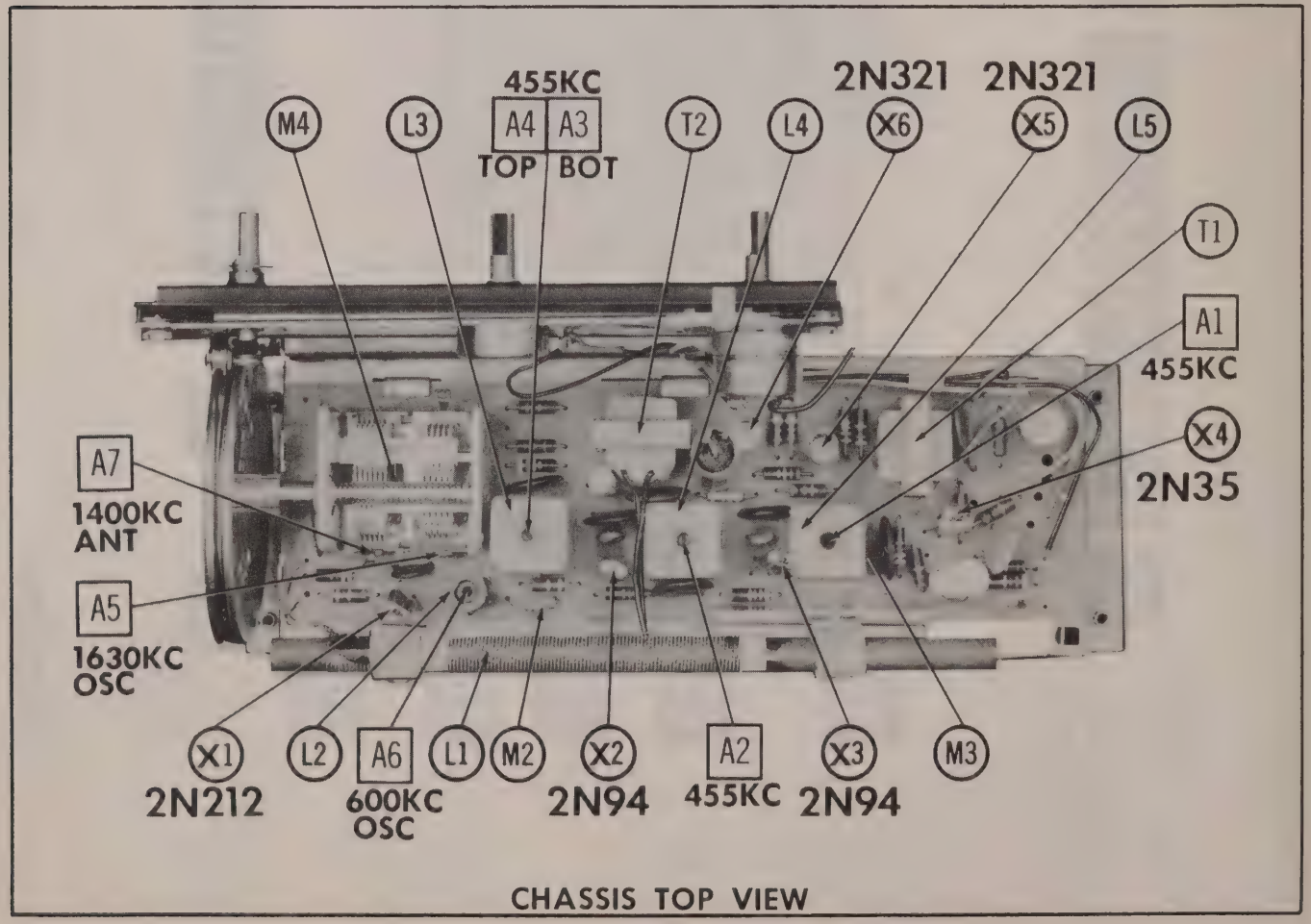
DIAL CORD STRINGING

SILVERTONE MODELS 9014, 9015, 9016 (Ch. 132.45700)

FOLDER 15



CHASSIS TOP VIEW



CHASSIS TOP VIEW

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

STROMBERG-CARLSON
MODEL C.A.R. 7

STROMBERG-CARLSON
MODEL C.A.R. 7

TRADE NAME	Stromberg-Carlson Model C.A.R. 7
MANUFACTURER	Stromberg-Carlson Co., Special Products Div., 1400 N. Goodman St., Rochester 9, N. Y.
TYPE SET	Battery Operated 5 Tube AM Automobile Receiver With Transistorized Output
POWER SUPPLY	12 Volt Storage Battery — RATING 2 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	535 — 1605KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1 thru A4.....	GENERAL CEMENT #8606, 8606L, 8282, 9295 WALSCO #2526, 2543, 2544, 2545
A5, A6.....	GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290 WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A7, A8, A9.....	GENERAL CEMENT #9050L, 9150 WALSCO #2521

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of Converter. Low side to chassis.	262.5KC (400~ Mod.)	High end stop.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle.	1605KC	"	"	A5, A6	"
	Perform Step 3 only if tuning coils have been tampered with or associated components have been replaced.						
3.	Fig. 1	Thru dummy to antenna receptacle.	1200KC	Tuner carriage 9/32" from high end stop.	Across voice coil	A7, A8, A9	Adjust for maximum output. Repeat Step 2 & 3 until no further improvement is noted.
4.	"	"	1400KC	1400KC	"	A10	Adjust for maximum output.
5.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A10 for maximum output.						

PUSHBUTTON ADJUSTMENT

1. Pull Pushbutton out.
2. Tune manually to desired station.
3. Press Pushbutton in firmly.
4. Repeat for remaining Pushbuttons.

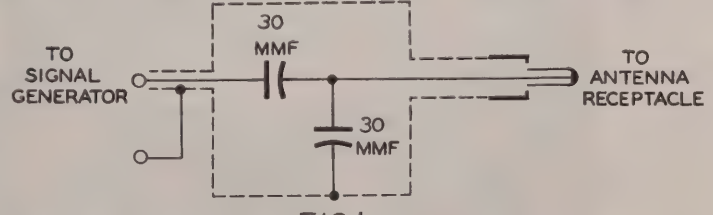


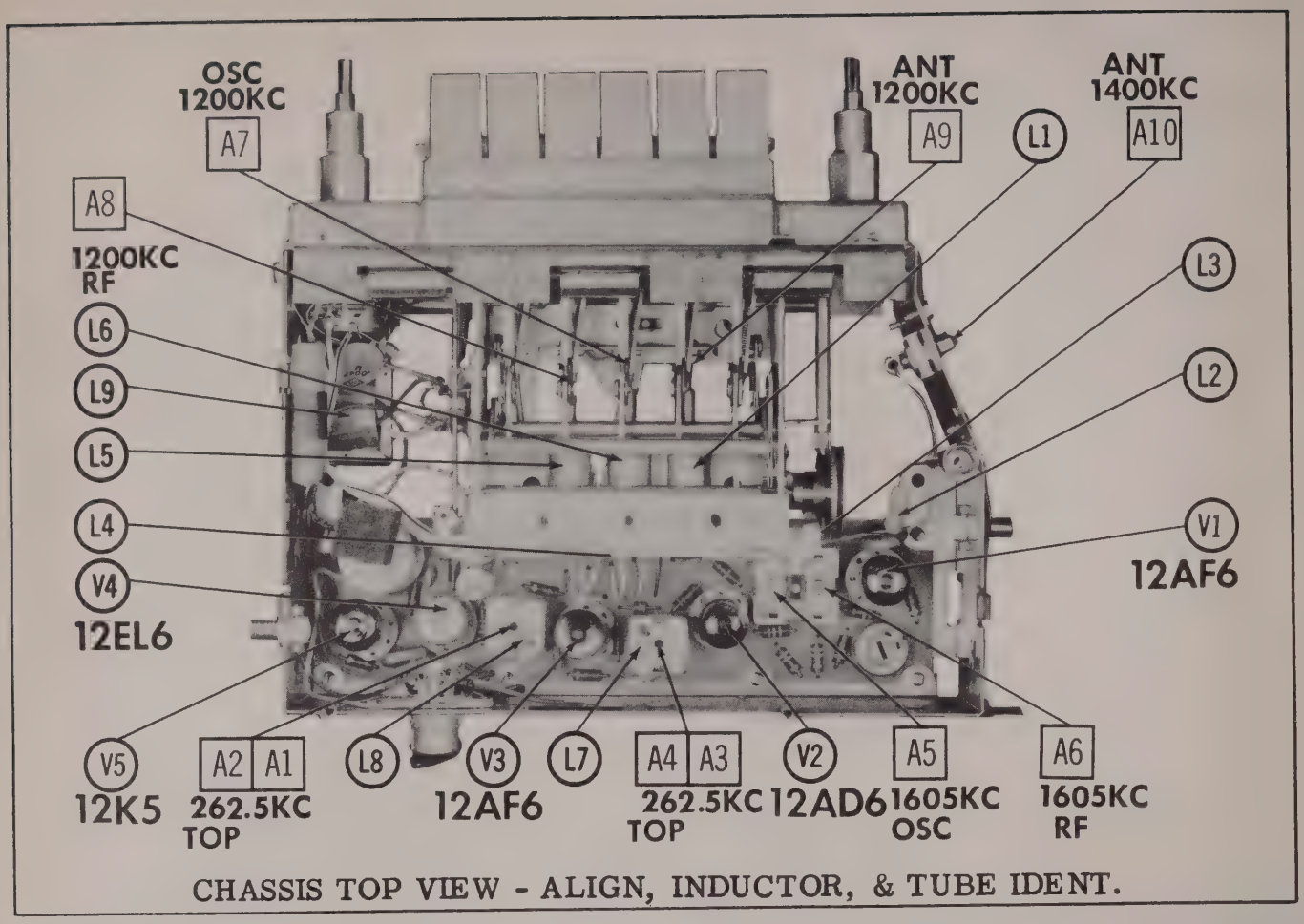
FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

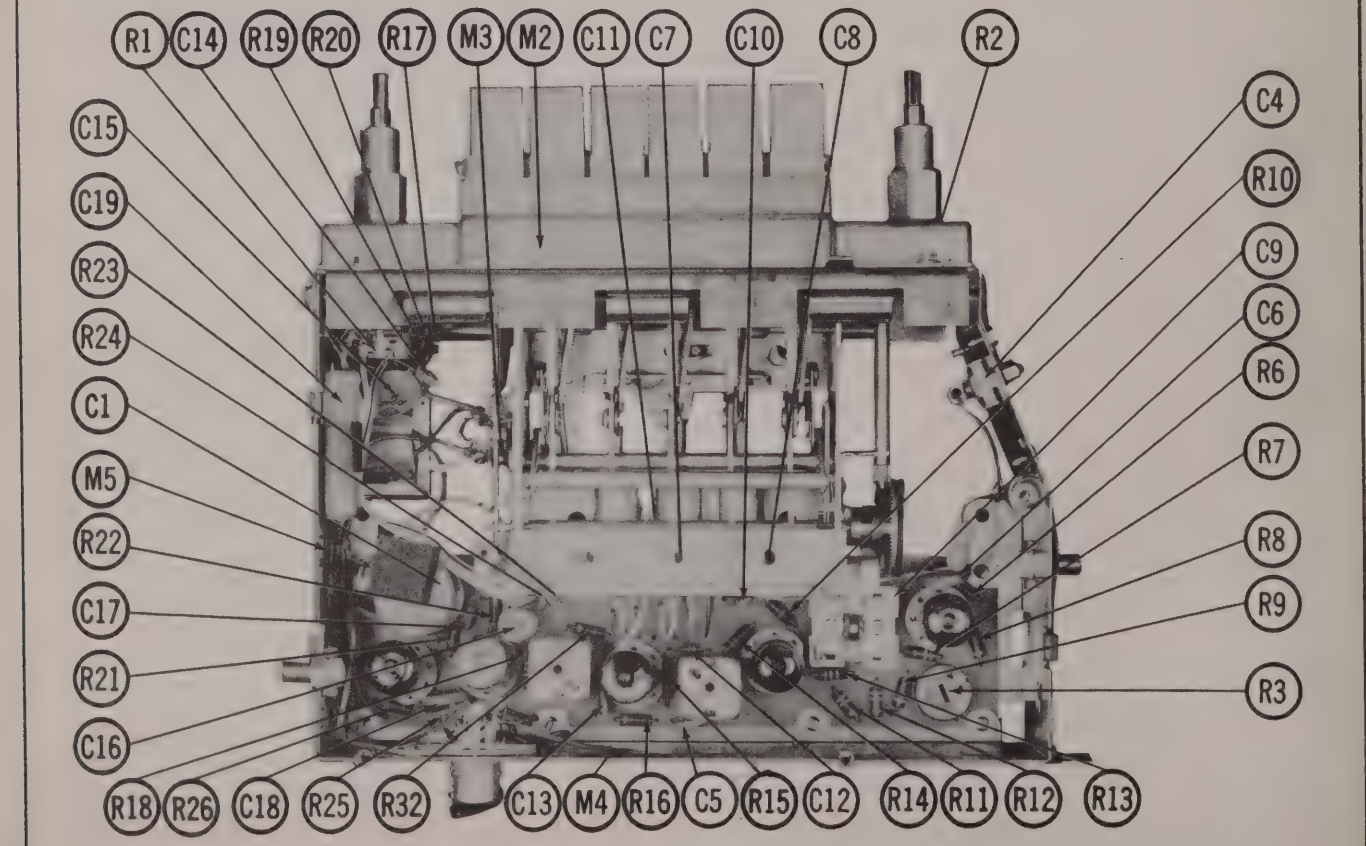
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JD280

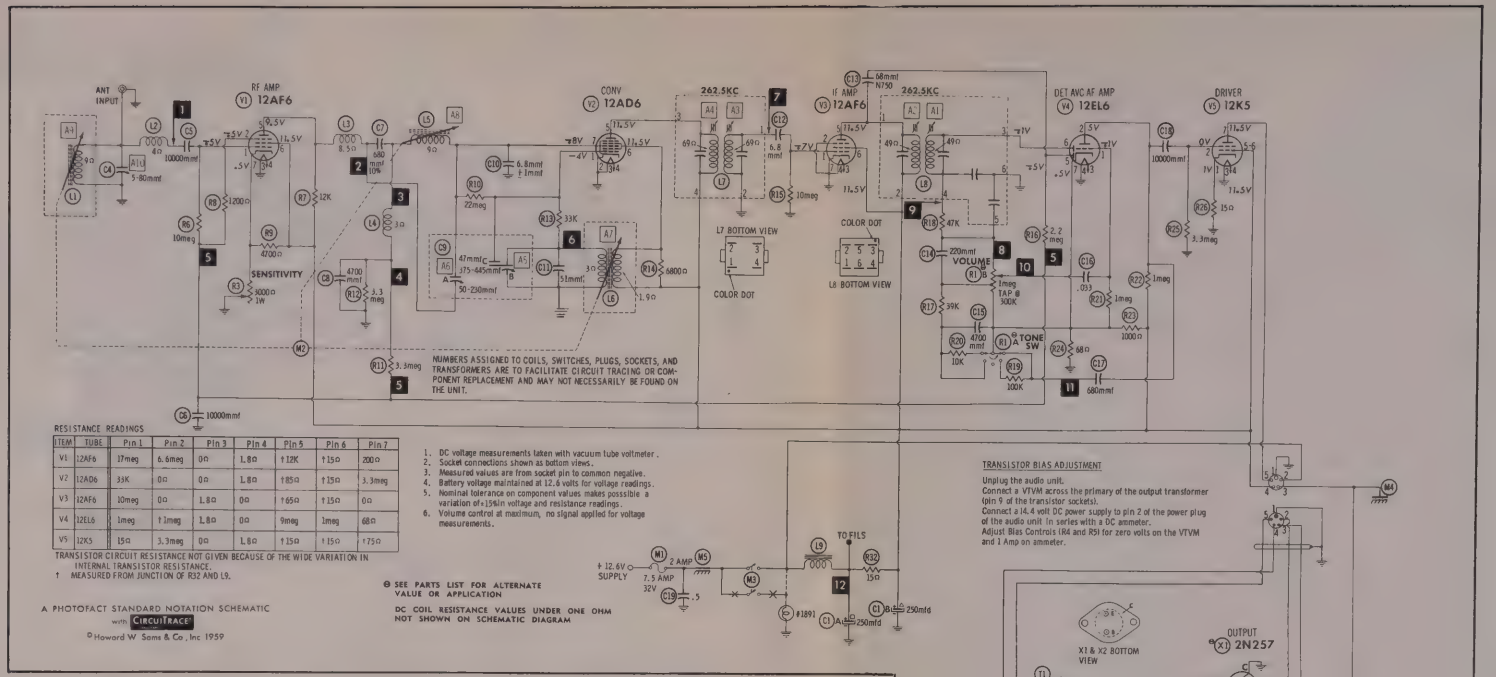
SET 458 FOLDER 16



CHASSIS TOP VIEW - ALIGN, INDUCTOR, & TUBE IDENT.



CHASSIS TOP VIEW - CAPACITOR, RESISTOR, & MISC IDENT.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AF6	17meg	6.6meg	0Ω	1.8Ω	†12K	†15Ω	200Ω
V2	12AD6	33K	0Ω	0Ω	1.8Ω	†85Ω	†15Ω	3.3meg
V3	12AF6	10meg	0Ω	1.8Ω	0Ω	†65Ω	†15Ω	0Ω
V4	12EL6	1meg	†1meg	1.8Ω	0Ω	9meg	1meg	68Ω
V5	12K5	15Ω	3.3meg	0Ω	1.8Ω	†15Ω	†15Ω	†75Ω

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM JUNCTION OF R32 AND L9.

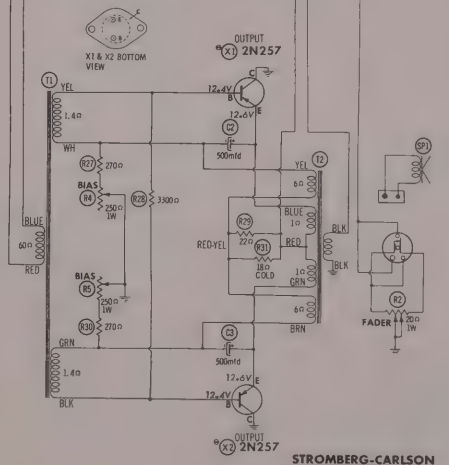
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

TRANSISTOR BIAS ADJUSTMENT

Unplug the audio unit.
Connect a VTVM across the primary of the output transformer (pin 9 of the transistor sockets).
Connect a 14.4 volt DC power supply to pin 2 of the power plug of the audio unit in series with a DC ammeter.
Adjust Bias Controls (R4 and R5) for zero volts on the VTVM and 1 Amp on ammeter.



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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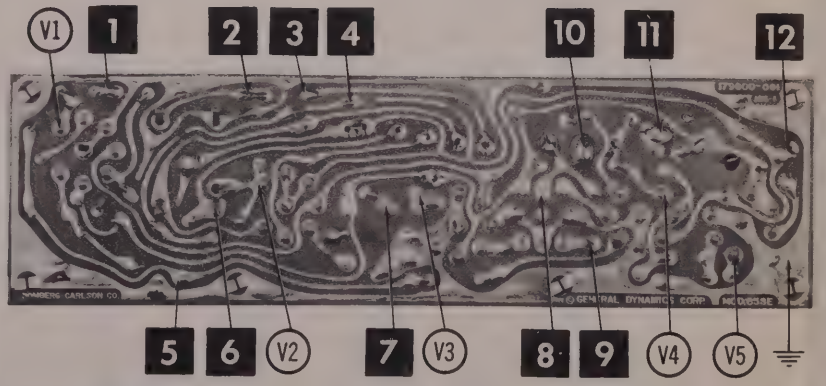
STROMBERG-CARLSON MODEL C.A.R. 7



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PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆		GENERAL ELECTRIC ◆		◆ RAYTHEON ◆		SYLVANIA ◆
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE	
V1	RF Amplifier	12AF6	V4	Det. -AVC-AF Amp.	12EL6	
V2	Converter	12AD6	V5	Driver	12K5	
V3	IF Amplifier	12AF6				

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES	
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.		
X1	2N257 *	Output	2N155			2N257	PNP	Matched
X2	2N257 *	Output	2N155			2N257	PNP	Pair

* Alternate Part #2N155

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲250	16	111001-003	AFH3-00-80		PWP200.3		PCL-2170	
B	▲250	16							
C2	500	3	111001-004	PRS6V500	BR500-6	TC305	TD-500-6	TVA-1103	
C3	500	3		PRS6V500	BR500-6	TC305	TD-500-6	TVA-1103	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	5-80			110000-001						
C5	10000			110002-026	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C6	10000			110919-000	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	680		10%	110915-000	1464-00068	D6-681	22R5T68		MS-368	
C8	4700			110002-054	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C9A	50-230			110000-011						
B	375-445									
C	47									

CAPACITORS (cont)

ITEM No.	RATING			Stromberg-Carlson PART No.	REPLACEMENT DATA					NOTES
	CAP.	VOLT	TOL		AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C10	6.8		±.1mmf	110002-057	NPO-DI 6.8	DD-6R8		CNO-568	5TCCB-V68S±.1mmf *	
C11	51			110918-000		TCZ-51	C10Q51C		5TCC-Q51S *	
C12	6.8			110907-000	NPO-SI 6.8	TCZ-6R8	C10V68C	CNO-568	5TCCB-V68	
C13	68		N750	110002-043	N750-SI 68	TCN-68	C10Q68U	CN7-468	5TCU-Q68	
C14	220			110921-000	BPD-00022	DD-221	L10T22	B-322	5GA-T22	
C15	4700			110920-000	BPD-0047	DD-472	BYA10D47M	B-247	5HK-D47	
C16	.033	200		110003-002	P215N-033	DF-303	BC2S33-J	ACE6133	2SE-S33	
C17	680			110002-050	BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C18	10000			110919-000	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C19	.5	50		110628-000	P185N-5		PJ2P5	GEM-205	2TM-P5	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	Switch		145000-001					Tone Switch ①
B	1meg -	½						Volume, Tap ⓐ 300K ①
R2	20Ω	1(WW)	145000-010					Fader
R3	3000Ω	1(WW)	145000-030			110-3000	PFL3K	Sensitivity
R4	250Ω	1(WW)	145000-020		39-300	112-300	FL-250	Bias
R5	250Ω	1(WW)	145000-020		39-300	112-300	FL-250	Bias

① Alternate Part #3145000-006

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R6	10meg		554002-106	
R7	12K		554001-123	
R8	1200Ω		554001-122	
R9	4700Ω		554002-472	
R10	22meg		554002-226	
R11	3.3meg		554001-335	
R12	3.3meg		554001-335	
R13	33K		554002-333	
R14	6800Ω		554002-682	
R15	10meg		554002-106	
R16	2.2meg		554001-225	
R17	39K		554001-393	
R18	47K		554002-473	
R19	100K		554002-104	

ITEM No.	RATING		Stromberg-Carlson PART No.	NOTES
	OHMS	WATT		
R20	10K		554002-103	
R21	1meg		554002-105	
R22	1meg		554002-105	
R23	1000Ω		554002-102	
R24	68Ω		554002-680	
R25	3.3meg		554002-335	
R26	15Ω		554001-150	
R27	270Ω		554002-271	
R28	3300Ω		554002-332	
R29	22Ω		554002-220	
R30	270Ω		554002-271	
R31	18ΩCold		149559-000	
R32	15Ω		554001-150	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Stromberg-Carlson PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Tuning Coil	†						
L2	RF Choke	114000-002						
L3	RF Choke	114000-004						
L4	RF Choke	114000-003						
L5	RF Tuning Coil	†						
L6	Osc. Tuning Coil	†						
L7	Input IF Trans.	114000-020						
L8	Output IF Trans.	114000-030						

† Part of Coil Ass'y. Part #171000-163. Coil Ass'y. part of M2 Part #164000-003.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L9	1.5A	.7Ω	.008 HY	161000-001						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC. 1	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	9	1	161000-010						
		SEC. 2							
	9	1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI. 1	SEC.	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	35Ω CT	3-4Ω	161000-020							
	PRI. 2									
	35Ω CT									

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Stromberg-Carlson PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω		69A3	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Stromberg-Carlson PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7.5A 32V		128000-001	30107.5 (SFE 7½A 32V)	155009	SFE 7½	HHH

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M2	Tuner	164000-003	Complete
M3	Switch	171000-168	Off-On
M4	Spark Plate	110000-022	
M5	Spark Plate	110000-020	

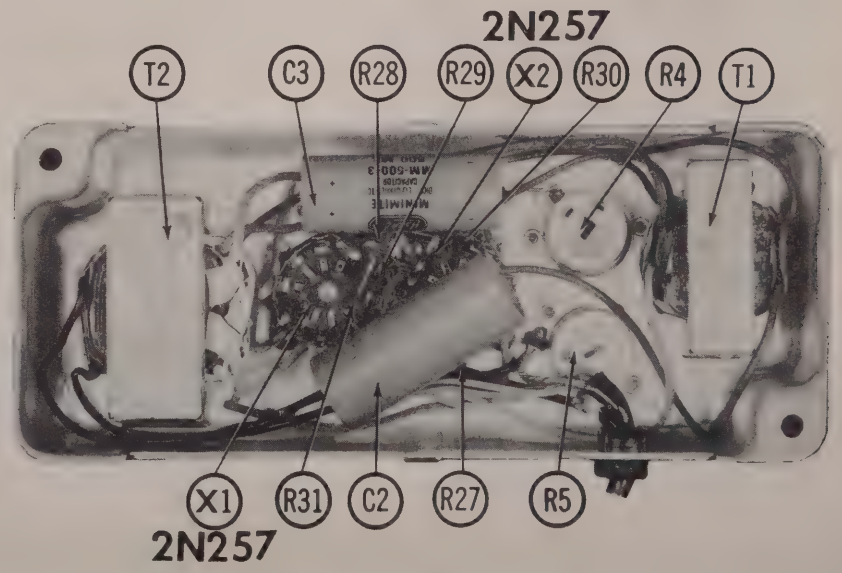
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Pushbutton	107000-003	Left Hand, Grey
Pushbutton	107000-007	Right Hand, Grey
Pushbutton	107000-011	Grey
Pushbutton	107000-004	Left Hand, White
Pushbutton	107000-008	Right Hand, White
Pushbutton	107000-012	White
Pointer	144000-001	
Dial	122000-001	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661



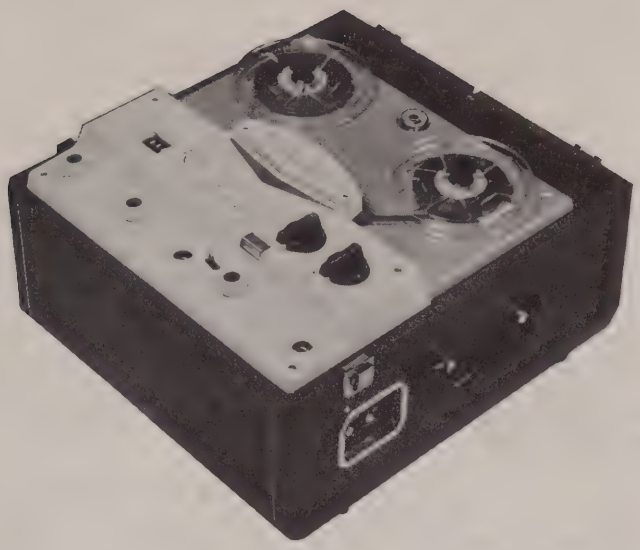
POWER CHASSIS

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

WEBCOR MODELS 2810, 2819, 2820, 2820-1C, 2910, 2919, 2923, 2950, 2955

WEBCOR MODELS 2810, 2819, 2820, 2820-1C, 2910, 2919, 2923, 2950, 2955



GENERAL INFORMATION

Webcor Models 2810, 2819, 2820, 2820-1C, 2910, 2919, 2923, 2950, and 2955 tape transports are mechanically similar. The main difference between them is in their head arrangements.

Models 2810 and 2910 are monaural tape recorders.

Models 2819 and 2919 are remote-control monaural tape recorders.

Models 2820 and 2955 are stereo tape recorders with co-linear heads.
The Model 2820-1C is a stereo tape recorder with two receptacles for External Channels 1 and 2, in place of the Output jack.

Model 2950 is a stereo tape deck only.

Model 2923 is a stereo tape recorder.

These tape transports will record and play back two tracks of recorded material monaurally. The stereo models will play back stereo recordings, but will not record them.

All models have three tape speeds — 7 1/2, 3 3/4, and 1 7/8 ips.

The Webcor models listed above operate on 117 volts AC only.

Manufactured by:
Webcor, Inc.
Chicago, Illinois

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

C398

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PREPARING FOR OPERATION

1. Remove lid.
2. Remove all accessories from storage compartment.
3. On stereo models, connect external speaker and amplifier to Ext. Amp jack on right side of cabinet.
4. Plug AC cord into a 110-120 volt AC source.

FUNCTION OF CONTROLS

Off-On-Volume

Turning this control clockwise turns on the AC power to the unit. Further rotation increases the volume.

Monitor-Tone

The Monitor control permits the operator to listen while making a recording. Monitor Off is in the extreme clockwise position. The Tone control governs the amount of bass and treble response during playback, but has no effect on recording being made.

Stereo Volume

On units with a Stereo Volume control, rotation of this control regulates the audio level in the external sound system. The external sound system reproduces the second channel of a stereophonic tape.

Edit Key

Moving this control to the right disengages the pressure roller and increases the pressure on the pressure arm and pad assembly. This action stops the tape instantaneously in the Record or Playback position.

Tape Speed Selector

Turning the Speed Selector control changes the speed of the recorder from 7 1/2 ips to 3 3/4 or 1 7/8 ips by changing the position of the drive belt on the stepped motor pulley.

Stop-Record-Play

The tape is set in motion when this control is turned to the Record-Play position.

Fast Forward-Rewind

To advance the tape, depress this control and turn to the Forward position. To rewind tape, depress the control and turn to the Rewind position.

Record Safety Lock

Depressing the Record Safety Lock and turning the Stop-Record-Play knob to Record puts the unit in the Record position. The lock cannot be depressed when the Stop-Record-Play knob is in the Play position. This prevents accidental erasure of a prerecorded tape.

OPERATING INSTRUCTIONS

Threading Tape

1. Place a reel of tape on left (supply) reel spindle (21).
2. Unwind approximately 18 inches of tape and thread it through the head tape slot.
3. Place an empty reel on right (take-up) reel spindle (15).
4. Insert the end of the tape into one of the reel slots and turn the reel three or four times, to secure the tape to the reel and to take up all slack.

To Record from a Microphone

1. Insert microphone plug into Input jack on recorder.
2. Turn Off-On-Volume control on and allow unit to warm up.
3. Depress the Record Safety Lock and slide it to the right to lock it in place. Speak into the microphone in a normal tone of voice.
4. Adjust recording level until the shadow on the recording-level indicator eye barely closes on the loudest sound.
5. To start the tape in order to make a recording, turn the Stop-Record-Play knob to the Record-Play position while holding down the Record Safety Lock.

To Record from a Phonograph or an AM or FM Radio

NOTE: When recording from a phonograph or an AM or FM radio equipped with an output jack, use Webcor Input Cord No. 2925. If the phonograph or radio is not equipped with an output jack, use Webcor Input Cord No. 2934. These input cords have a built-in 22,000-ohm resistor to prevent overloading of the recorder input stages.

1. Insert input cord plug into Input jack on recorder.
2. When using Input Cord No. 2925, insert the small plug into the output jack on the phonograph or radio.

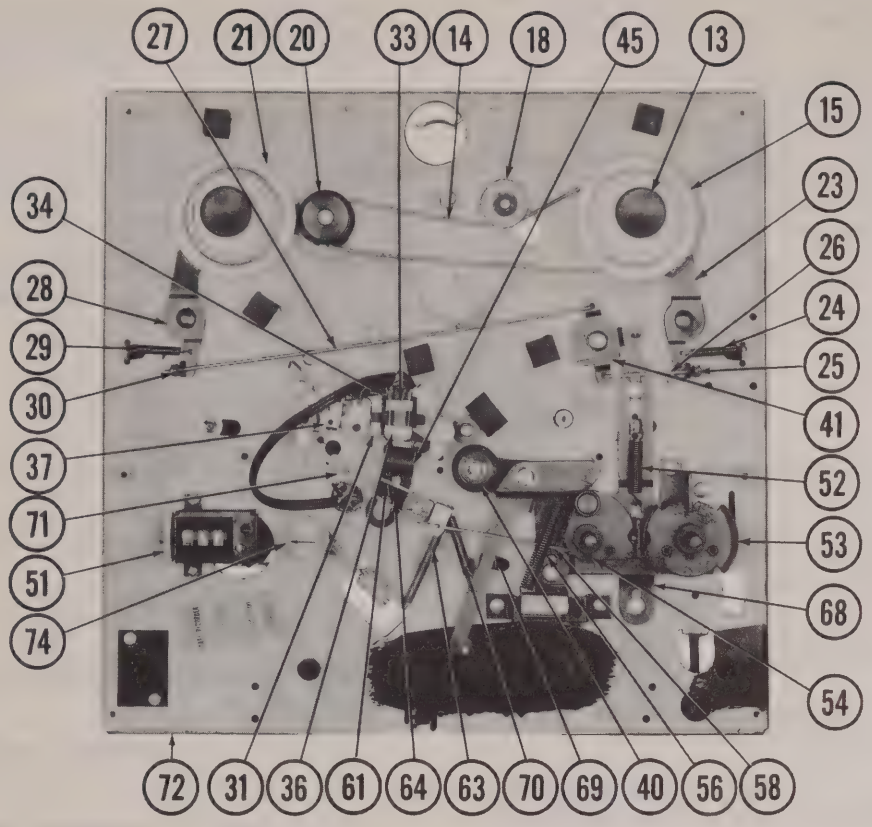


FIG. 1 TOP VIEW OF MECHANISM WITH ESCUTCHEON REMOVED

3. When using Input Cord No. 2934, connect the alligator clips to the voice-coil terminals of the speaker.

4. Follow steps under "To Record from a Microphone".

Fast Rewind and Fast Forward

High-speed forward or rewind can be obtained by depressing Forward-Rewind control and turning it to Fast Forward or Rewind. Any portion of a recording can be located in a few seconds with this control.

NOTE: Before turning the recorder off or pulling the AC plug from the wall socket, be sure the Fast Forward-Rewind control is in the neutral position; otherwise, the tape will spill.

To Play Back a Monaural Recording

1. Thread tape as described under "Threading Tape".

2. Turn Stop-Record-Play control to Record-Play position.

3. Adjust Volume and Tone controls for desired listening level.

NOTE: To prevent the co-linear heads from playing back both tracks of a monaural tape simultaneously, turn the Stereo Volume control down or pull the external speaker jack from the Ext. Amp. jack. This applies only to those recorders set up for stereo playback.

To Play Back a Stereophonic Recording

1. Thread tape as described under "Threading Tape".

2. Turn Stop-Record-Play control to Record-Play position.

3. Adjust Volume control on tape deck to desired listening level.

4. Turn Tone control to Treble position.

5. Adjust Stereo Volume control for the external sound system until the system is in balance with the speaker on the tape recorder.

To Erase a Recording

The erase head is automatically positioned when the unit is in the Record position. To erase a recording without making a new one, follow the normal recording procedure, but leave the Volume control in its minimum position.

To Use as a Public-Address System

1. Connect tape recorder to an external sound system with a Webcor Output Cord No. 2935.
2. On external sound systems with a power amplifier, insert the output cord halfway into the Output jack on the tape recorder.
3. On external sound systems without a power amplifier, insert the output plug all the way into the Output jack on the tape recorder.
4. Turn Monitor control on.
5. Connect sound source to recorder. Turn Off-On-Volume control on to apply power to the recorder.
6. When using a microphone for the sound source, insert microphone plug into the Input jack on recorder and place recorder in Record position.
7. When using a radio, phonograph, or Television receiver, use Webcor Input Cord No. 2934 or 2925. Insert the plug on the input cord into the Input jack on the tape recorder, and connect other end to the sound source.
8. Place recorder in Record position. Adjust the Volume and Tone controls for the desired listening level.

DISASSEMBLY

To Remove Tape Transport from Case

1. Remove Off-On-Volume, Monitor-Tone, and Ext. Stereo Volume (on models with a stereo amplifier) control knobs.
2. Loosen Bristol set screws in Forward-Rewind and Stop-Record-Play knobs. Remove knobs.
3. Remove the two mounting screws on the head cover. Remove head cover.
4. Remove six front escutcheon and top plate screws. Remove front escutcheon and top plate.
5. Remove four screws from bottom of case. Lift mechanism from case and disconnect the speaker leads.
6. To reassemble, reverse the foregoing procedure.

To Remove Preamplifier from Tape Transport

1. Remove the retaining rings from the Monitor-Tone and Off-On-Volume controls.
2. Remove the four mounting screws holding the Preamplifier support bracket to the top of the mechanism.
3. Remove the pal nut from the Input jack.
4. Remove three screws from the reinforcing bracket, and move bracket out of the way.
5. Lift preamplifier and support bracket from mechanism.
6. Remove two screws from support bracket. Lift out preamplifier.
7. To reassemble, reverse the foregoing procedure.

To Remove Stereo Preamplifier

1. Remove mechanism from case.
2. Disconnect the power input plug.
3. Remove two screws from left side plate, and pivot plate out of the way.
4. Remove four screws from support bracket. Remove stereo preamplifier.
5. To reassemble, reverse the foregoing procedure.

ADJUSTMENTS

Rewind

1. Place an empty five-inch reel on left-reel spindle (21).
2. Tie a heavy string to the empty reel hub, and wind the string counterclockwise around the hub several turns.
3. Make a loop in the other end of the string and secure the loop to a two-pound spring scale.
4. Hold scale at a right angle to the reel drive, and apply power to the recorder.
5. Turn Fast Forward-Rewind control to the Rewind position.
6. The reading should be 16 $\pm$ 2 ounces.
7. If the scale reads less than 14 ounces:

   On earlier production models--turn stop nut on end of rewind link (91) clockwise until scale reads 16 $\pm$ 2 ounces.

   On later production models--check for dirty surfaces or binding.

8. If the scale reads more than 18 ounces:

   On earlier production models--stop nut may be binding on the spindle lever and bearing assembly.

   On later production models--turn stop nut counterclockwise until scale reads 16 $\pm$2 ounces.

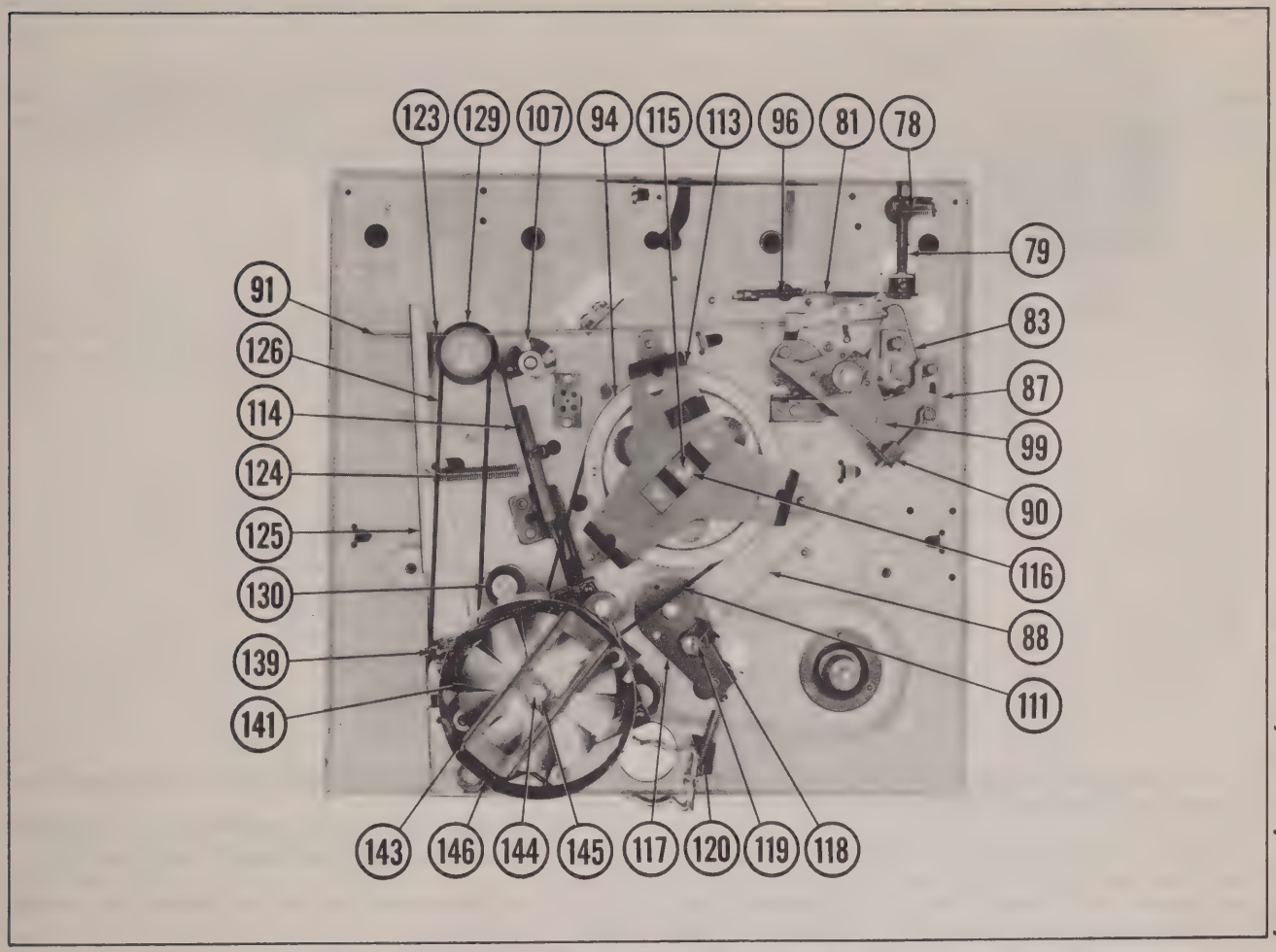


FIG. 2 BOTTOM VIEW OF MECHANISM

Fast Forward on Early Production Models

1. Place empty five-inch reel on right-reel spindle (15).
2. Tie a heavy string to the tape reel hub and wind the string clockwise around the hub several turns.
3. Make a loop in the other end of the string and secure the loop to a spring type scale.
4. Hold scale at a right angle to the reel spindle drive, and turn on the AC power to the recorder.
5. Turn Fast Forward-Rewind control to Forward position.
6. The reading should be 17 $\pm$ 1 ounces.
7. If the reading is less than 16 ounces, turn stop nut (119) clockwise until the scale reads 17 $\pm$ 1 ounces.
8. If the reading is more than 18 ounces, turn stop nut (119) counterclockwise until the scale reads 17 $\pm$ 1 ounces.

Fast Forward on Later Production Models

1. Repeat Steps 1 thru 4 in "Fast Forward on Early Production Models".
2. Scale should read 6 $\pm$ 1 ounces when the Stop-Record-Play knob is in the Record-Play position.
3. Return the Stop-Record-Play knob to Stop position if the scale reads less than 5 ounces. Loosen set screw (148), and slide collar (90) toward take-up actuator (99). Tighten set screw (148) and recheck the scale.
4. If scale still reads less than 5 ounces after Step 3 has been done, turn stop nut (119) clockwise until the scale reads 5 ounces.
5. If scale reads over 7 ounces, slide collar (90) away from take-up actuator (99) until the scale reads 6 $\pm$ 1 ounces. Tighten set screw.

Brake

1. Clean brake pads (23A), right-reel spindle (15), and left-reel spindle (21).
2. Turn Forward-Rewind knob to Forward position.
3. Adjust stop nuts (25) and (30) between brake pads (23A) and reel spindles (15) and (21) for minimum clearance.

Safety Release

If the top slot on the Record Safety Lock does not engage the record actuator bracket, the angle on

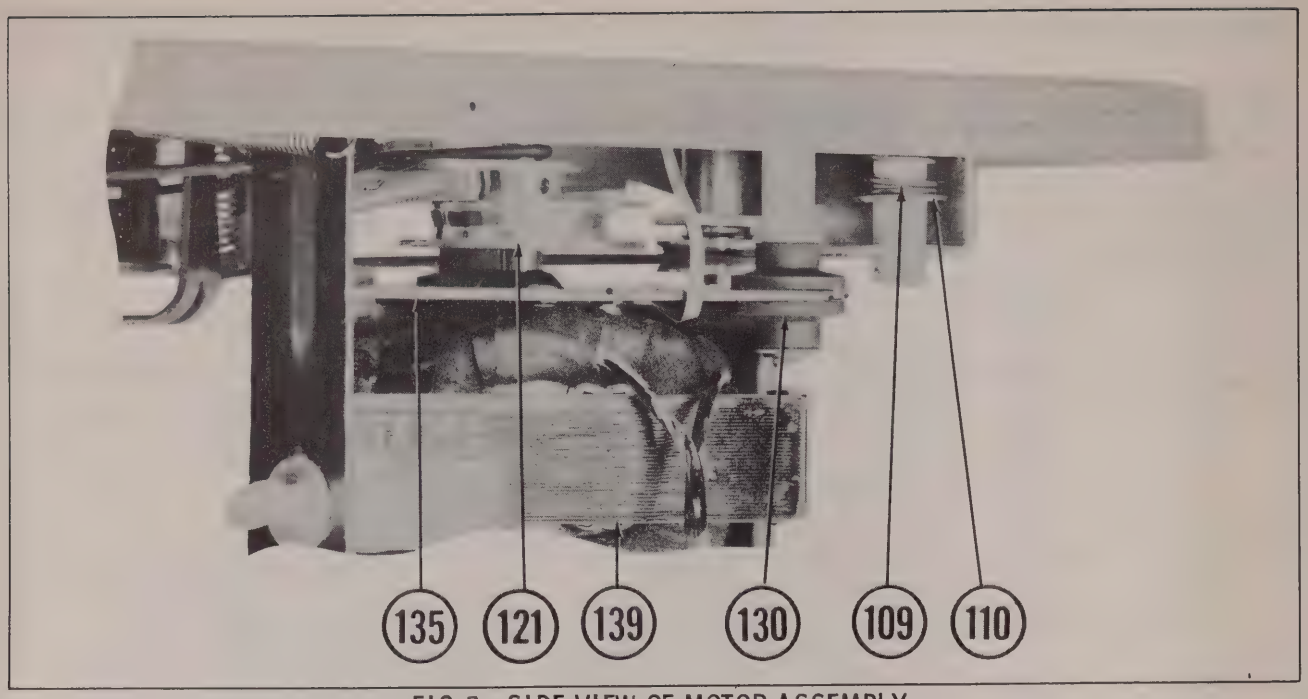


FIG. 3 SIDE VIEW OF MOTOR ASSEMBLY

the record safety lock release bracket is not great enough, and should be formed to the proper angle.

If the Record Safety Lock fails to release from its locked position when another position is selected, the angle on the Record Safety Lock release bracket is too great, and should be formed to the proper angle.

Record-Playback Switch Actuator

1. Be sure recorder is off and Stop-Record-Play control is in Stop position.
2. Check to see if slab-head screw (82) on switch lever and hub assembly is tight.
3. Loosen slab-head set screw (76) and position over-travel assembly so the Stop-Record-Play Knob slides to the extreme right, or playback position.
4. Position the over-travel arm assembly on the shaft for a 1/16-inch clearance between the assembly and the record-playback switch coupler bar, to prevent binding.
5. Tighten slab-head set screw (76), depress the Record Safety Lock, and turn the Stop-Record-Play Knob to the Record-Play position. The Record Safety Lock should lock in the depressed position, and the Stop-Record-Play Knob should slide to the extreme left, or record, position.

Speed Change

1. Connect recorder to a 117-volt AC source.
2. Place recorder in a vertical position.
3. Turn Speed Selector Knob to 1 7/8-ips position.
4. Remove outside set screw on speed-change cam.
5. Loosen inside set screw on speed-change cam.
6. Adjust cam on cam shaft until drive belt just clears top fork straddling the drive belt.
7. Tighten set screw (108) and replace the locking set screw.
8. Turn Speed Selector Knob from 3 3/4 to 7 1/2 ips, and note the speed change.
9. Place recorder in a horizontal position, and observe the belt action through the speed changes.

NOTE: Make sure the straddling forks of belt shifter (114) can clear the motor drive pulley.

Playback-Record Head

1. Remove head cover and clean pole pieces.
2. Place Record-Play Knob in Stop position.
3. Thread an alignment tape on recorder.
4. Turn Speed Selector Knob to 7 1/2 ips.
5. Turn Volume and Tone controls to maximum.
6. Connect AC VTVM to Ext. Amp. in Output jack. (Insert plug halfway into output jack).
7. Turn recorder to Play position.
8. Adjust head retaining bracket until maximum meter reading is obtained.

NOTE: Of the three alignment peaks, adjust head to the one that gives the highest maximum meter reading.

LUBRICATION

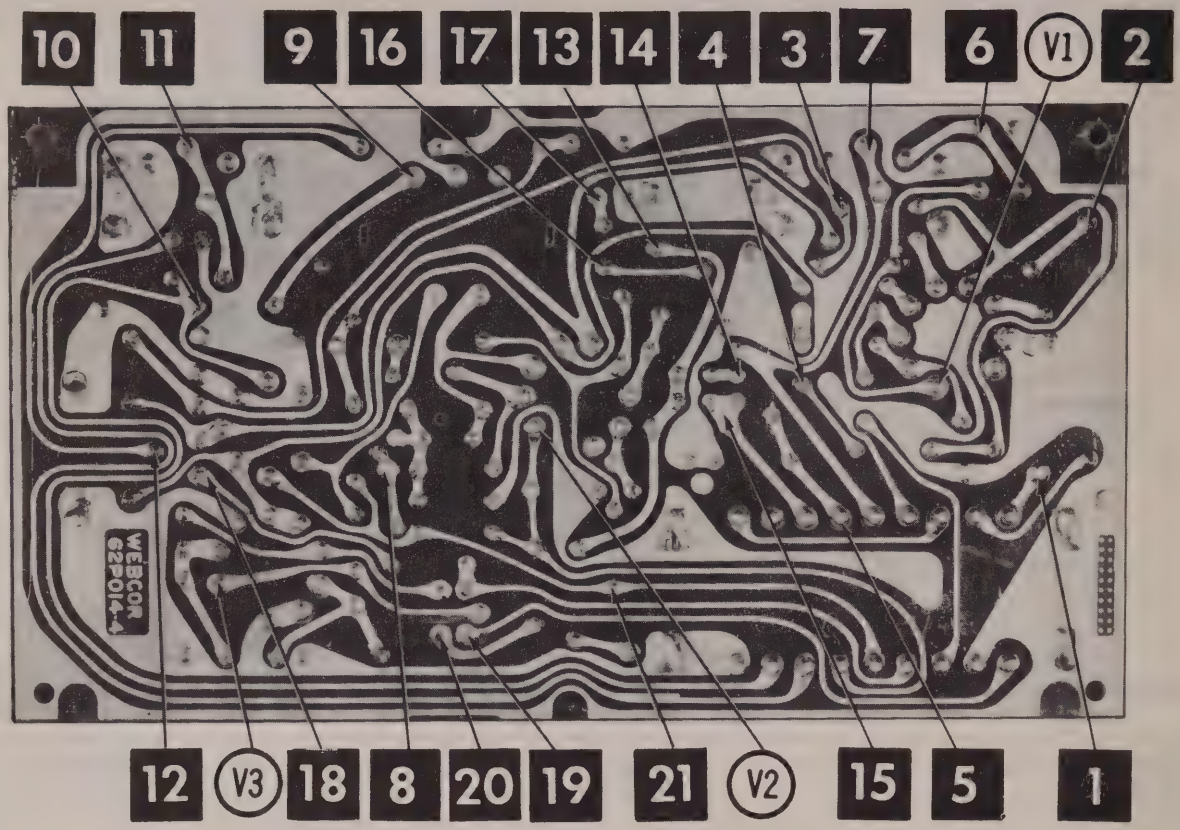
Points on the exploded view indicated by a dot (.) should be lubricated with one or two drops of light sewing machine oil when required. Points indicated by a triangle (▲) should be lubricated with a high-temperature, medium-viscosity grease. Be sure no oil or grease gets on the belts, fast transport pulley, pressure roller, reel spindles or on any parts that may transfer oil or grease to them. Do not overlubricate.

CLEANING

Most defects, other than wear or breakage, can be traced to dirty surfaces. The recording head, capstan, and pressure roller may accumulate tape-coating residue, which is worn off the tape as it passes these parts. This accumulation should be periodically removed, since it may cause faint recording and poor playback. Wipe these surfaces carefully with a clean cloth. If dirt is caked or hard and does not come off with a dry cloth, dampen the cloth slightly with alcohol.

TROUBLE CHART

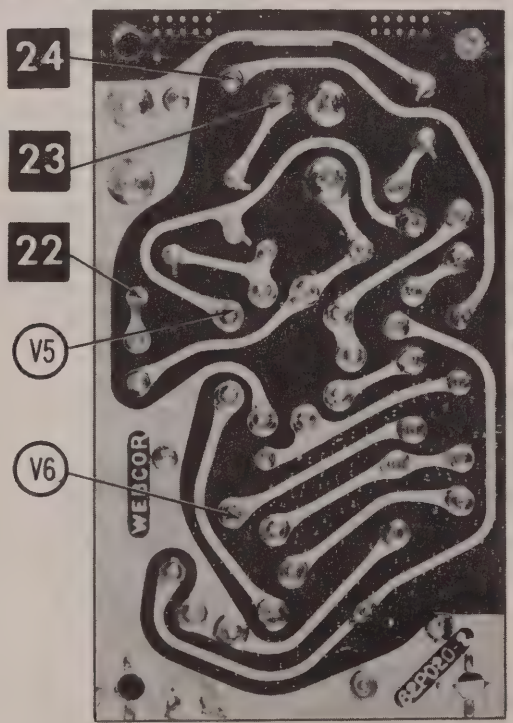
Symptom	Cause	Remedy
Motor does not operate.	1. Motor (139) windings open or shorted.	1. Replace motor (139).
	2. Motor shaft binding.	2. Clean bearings, and lubricate.
	3. Motor shaft bent.	3. Straighten shaft, or replace motor.
Motor stalls in Rewind position.	1. Rewind mechanism adjusted too tightly.	1. See "Rewind Adjustment".
Motor runs, but capstan does not rotate.	1. Capstan drive belt (111) loose or broken.	1. Replace capstan drive belt (111).
	2. Capstan shaft (94) bent.	2. Straighten or replace capstan shaft (94).
	3. Capstan shaft (94) binding.	3. Clean capstan bearings, and lubricate.
Pressure roller does not engage the capstan in Play or Record position.	1. Tension spring (56) disconnected or broken.	1. Connect or replace tension spring (56).
	2. Pressure roller (40) binding.	2. Be sure pressure roller (40) is not binding against adjacent parts.
Take-up reel does not turn in Record, Play or Fast Forward positions.	1. Brakes misadjusted.	1. See "Brake Adjustment".
	2. Reel drive belt (14) on right-reel spindle broken or on wrong side of tension idler (18).	2. Replace reel drive belt (14) or place on the correct side of tension idler (18).
	3. Fast transport pulley (20) or right-reel spindle (15) slipping because of grease.	3. See "Cleaning".
Tape will not unwind from supply reel in Record or Play position.	1. Pressure roller (40) not contacting capstan shaft.	1. Check to see whether pressure roller (40) is binding on adjacent parts.
	2. Left-reel spindle (21) binding.	2. Check brakes to see whether they are properly adjusted.
Counter does not register.	1. Counter belt (126) broken.	1. Replace counter belt (126).
	2. Reset wheel is bending.	2. Check for binding on adjacent parts.



A Howard W. Sams CIRCUITRACE Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



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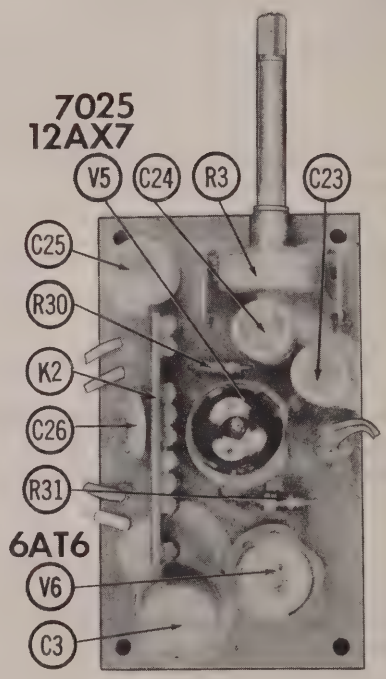
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



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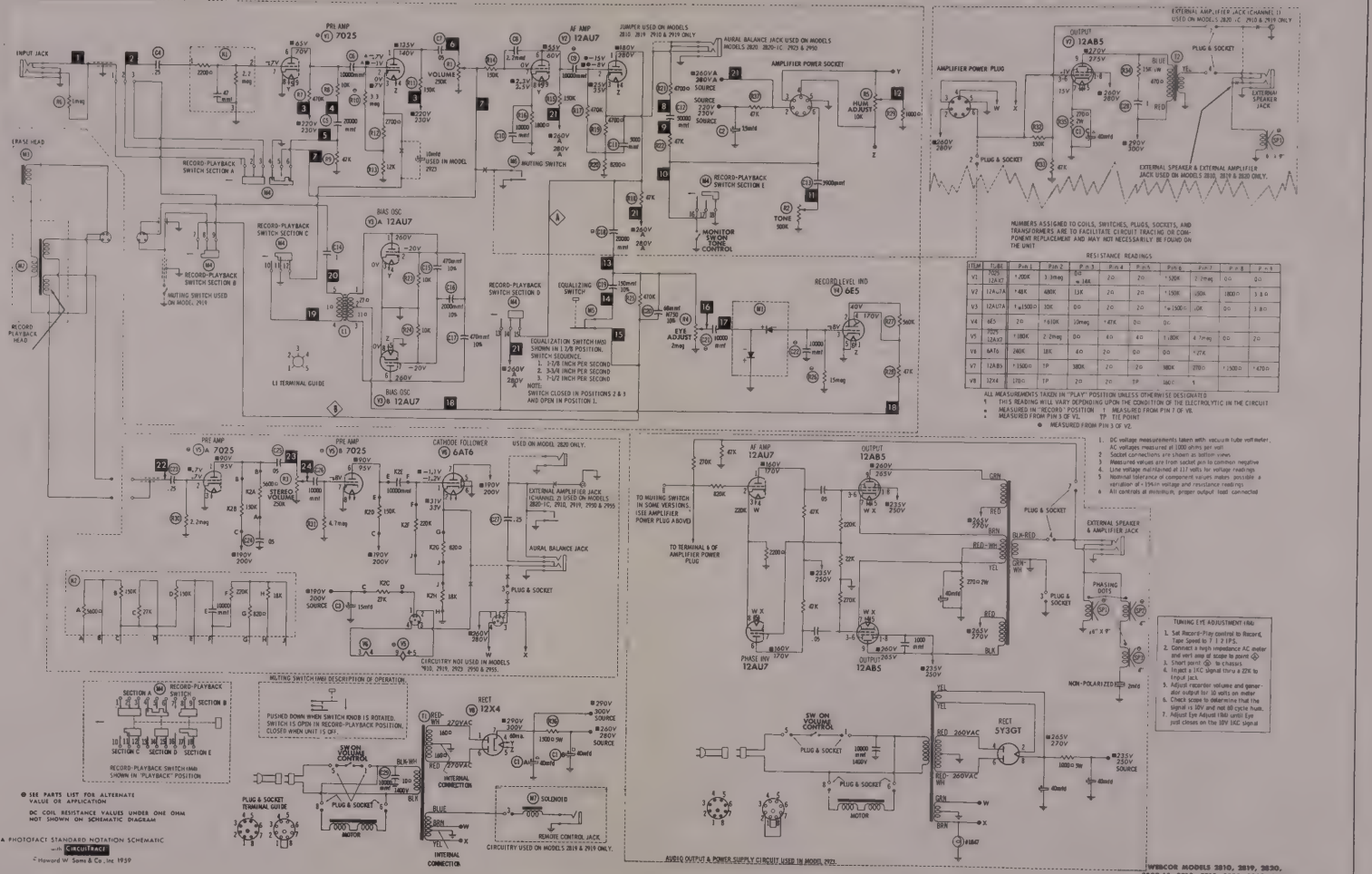

PRE AMP V1A 7025
AF AMP V2 12AU7
OUTPUT V7 12AB5
BIAS OSC V3A 12AU7
BIAS OSC V3B 12AU7
RECORD LEVEL IND M 6E5
PRE AMP V5A 7025
PRE AMP V5B 7025
CATHODE FOLLOWER V6 6AT6
RECT W 12X4
RECT 5Y3GT
INPUT JACK
ERASE HEAD
RECORD PLAYBACK HEAD
VOLUME 250K
STEREO VOLUME 250K
AURAL BALANCE JACK
AMPLIFIER POWER SOCKET
AMPLIFIER POWER PLUG
HUM ADJUST 10K
TONE 500K
EYE ADJUST 2meg
MONITOR SW ON TONE CONTROL
SW ON VOLUME CONTROL
EXTERNAL SPEAKER JACK
EXTERNAL AMPLIFIER JACK
PHASING DOTS
NON-POLARIZED
SOLENOID
MOTOR
RECORD-PLAYBACK SWITCH SECTION A
RECORD-PLAYBACK SWITCH SECTION B
RECORD-PLAYBACK SWITCH SECTION C
RECORD-PLAYBACK SWITCH SECTION D
RECORD-PLAYBACK SWITCH SECTION E
EQUALIZING SWITCH
MUTING SWITCH
EQUALIZATION SWITCH(M5) SHOWN IN 1 7/8 POSITION. SWITCH SEQUENCE.
1. 1-7/8 INCH PER SECOND
2. 3-3/4 INCH PER SECOND
3. 7-1/2 INCH PER SECOND
NOTE: SWITCH CLOSED IN POSITIONS 2 & 3 AND OPEN IN POSITION 1.
JUMPER USED ON MODELS 2810 2819 2910 & 2919 ONLY
AURAL BALANCE JACK USED ON MODELS 2820 2820-1C 2923 & 2950
EXTERNAL AMPLIFIER JACK (CHANNEL 2) USED ON MODELS 2820-1C, 2910, 2919, 2950 & 2955
EXTERNAL AMPLIFIER JACK (CHANNEL 1) USED ON MODELS 2820 1C 2910 & 2919 ONLY
EXTERNAL SPEAKER & EXTERNAL AMPLIFIER JACK USED ON MODELS 2810, 2819 & 2830 ONLY.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
RESISTANCE READINGS
ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9
V1 | 7025 12AX7 | *.200K | 3.3meg | 0Ω ∞ 1M | 2Ω | 2Ω | *.520K | 2.2meg | 0Ω | 0Ω
V2 | 12AU7A | *48K | 480K | 13K | 2Ω | 2Ω | *.150K | .330K | 1800Ω | 3 Ω
V3 | 12AU7A | *.1500Ω | 10K | 0Ω | 2Ω | 2Ω | *.1500Ω | .0K | 0Ω | 3 Ω
V4 | 6E5 | 2Ω | *.610K | 10meg | *.47K | 0Ω | 0Ω | | |
V5 | 7025 12AX7 | *.180K | 2.2meg | 0Ω | 4Ω | 4Ω | *.180K | 4.7meg | 0Ω | 2Ω
V6 | 6AT6 | 240K | 18K | 4Ω | 2Ω | 0Ω | 0Ω | *.47K | | |
V7 | 12AB5 | *.1500Ω | TP | 380K | 2Ω | 2Ω | 380K | 270Ω | *.1500Ω | *.470Ω
V8 | 12X4 | 170Ω | TP | 2Ω | 2Ω | TP | 180Ω | 1 | | |
ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
* MEASURED IN "RECORD" POSITION
† MEASURED FROM PIN 3 OF V1.
1 MEASURED FROM PIN 7 OF V8.
TP TIE POINT
● MEASURED FROM PIN 3 OF V2.
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected
TUNING EYE ADJUSTMENT (M6)
1. Set Record-Play control to Record, Tape Speed to 7 1/2 IPS.
2. Connect a high impedance AC meter and vert amp of scope to point ④
3. Short point ⑤ to chassis.
4. Inject a 1KC signal thru a 22K to input jack.
5. Adjust recorder volume and generator output for 10 volts on meter.
6. Check scope to determine that the signal is 10V and not 60 cycle hum.
7. Adjust Eye Adjust (M6) until Eye just closes on the 10V 1KC signal
MUTING SWITCH (M6) DESCRIPTION OF OPERATION
PUSHED DOWN WHEN SWITCH KNOB IS ROTATED. SWITCH IS OPEN IN RECORD-PLAYBACK POSITION. CLOSED WHEN UNIT IS OFF.
RECORD-PLAYBACK SWITCH (M4) SHOWN IN "PLAYBACK" POSITION
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
© Howard W. Sams & Co., Inc. 1959
CIRCUITRY NOT USED IN MODELS 2810, 2819, 2923, 2950 & 2955.
CIRCUITRY USED ON MODELS 2819 & 2919 ONLY.
AUDIO OUTPUT & POWER-SUPPLY CIRCUIT USED IN MODEL 2923.
WEBCOR MODELS 2810, 2819, 2830, 2820-1C, 2910, 2919, 2922, 2950, 2955

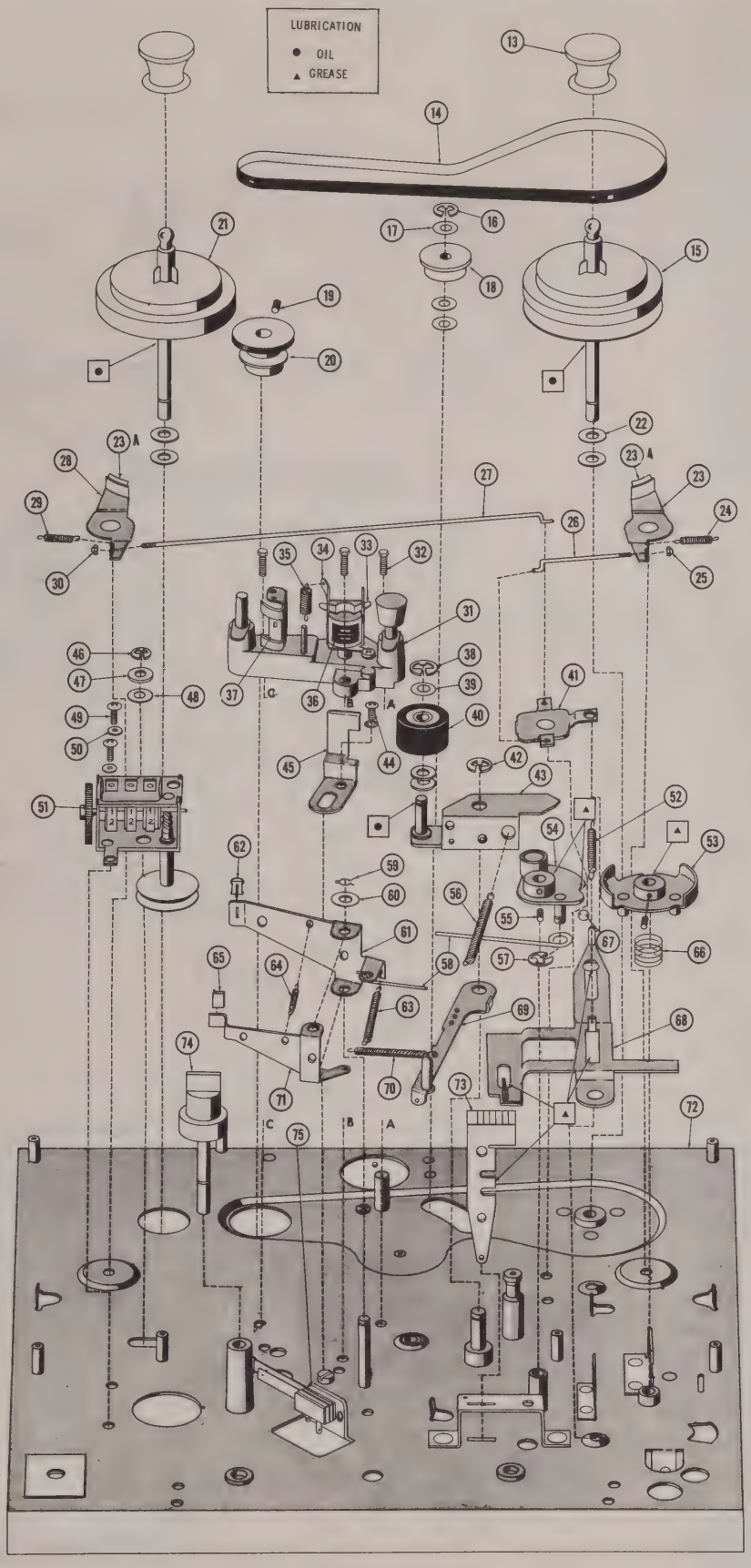


FIG. 4A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

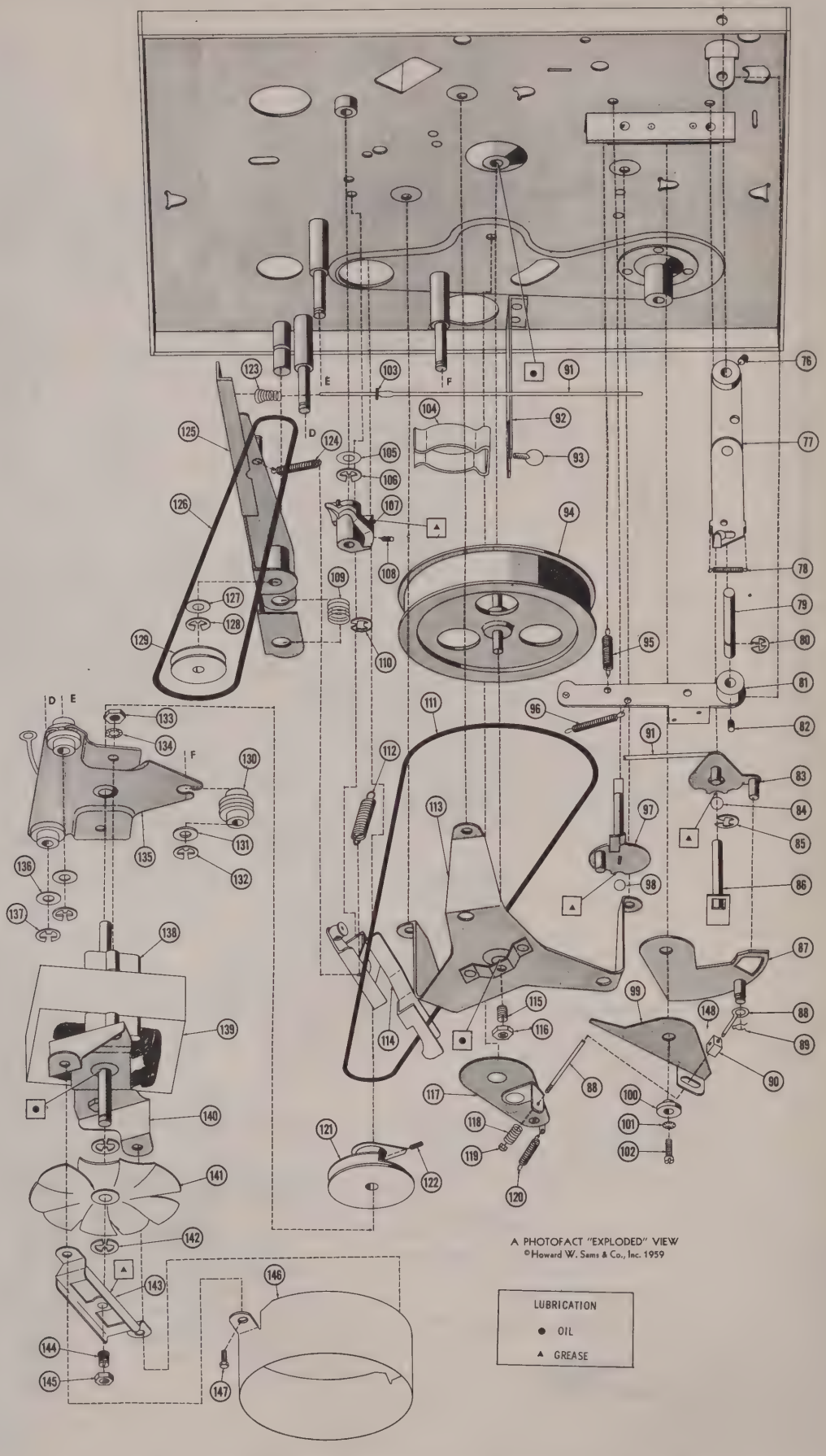


FIG. 4B EXPLODED VIEW OF PARTS BELOW BASEPLATE

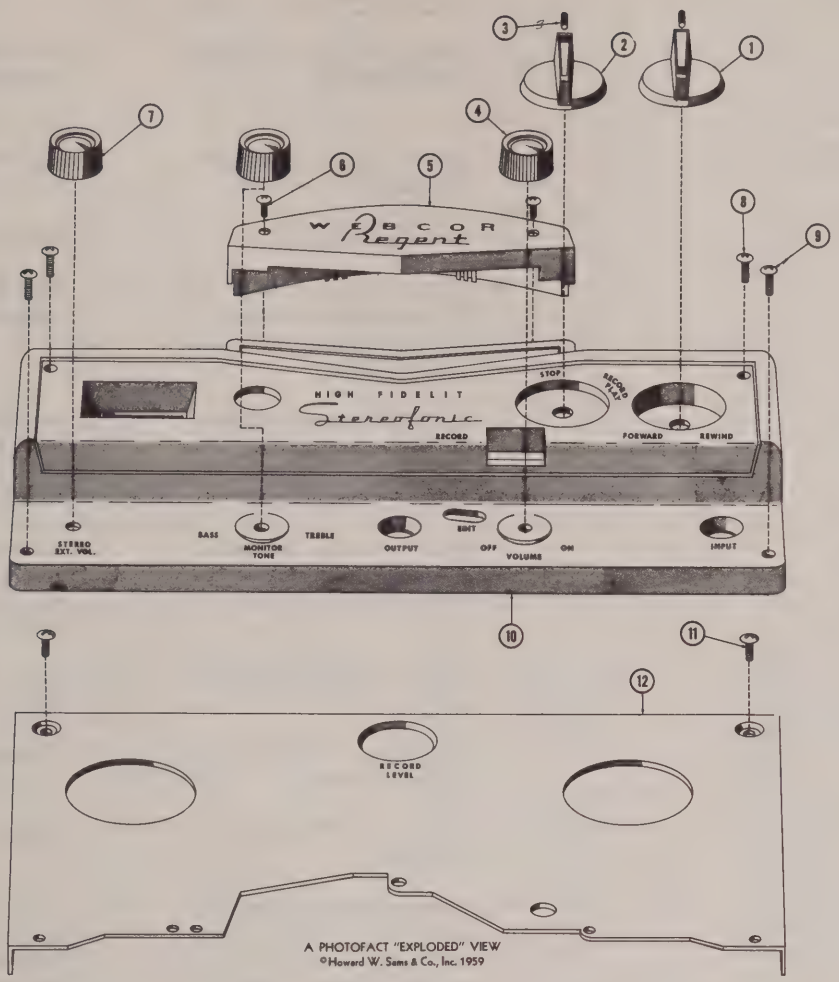


FIG. 4C EXPLODED VIEW OF PARTS ABOVE ESCUTCHEON

TROUBLE CHART (CON'T)

Symptom	Cause	Remedy
Erratic tape speed.	1. Oil or grease on motor pulley (121), drum of capstan (94), or pressure roller (40).	1. See "Cleaning".
	2. Brakes improperly adjusted.	2. See "Brake Adjustment".
	3. Capstan (94) binding.	3. Check for foreign matter or bind in shaft.
	4. Left-reel spindle (21) binding.	4. Check for bent shaft or foreign matter.
	5. Motor bearing needs oil.	5. See "Lubrication".
Take-up reel spills tape when going from Record, Play, or Fast Forward to Stop position.	1. Brake pads (23A) worn.	1. Replace brake pads (23A).
	2. Right brake (23) and left brake (28) overadjusted.	2. See "Brake Adjustment".

Symptom	Cause	Remedy
	3. Fast forward mechanism overadjusted.	3. See "Fast Forward Adjustment".
Weak recording and playback, or no recording.	1. Record-playback head(36) misaligned.	1. See "Head Alignment".
	2. Erase pad (65) worn.	2. Replace erase pad (65).
	3. Tension spring (63) or (64) missing or broken on pressure arm and pad assembly.	3. Replace tension spring (63) or (64).
	4. Record-playback head(36) faulty.	4. Replace record-playback head (36).
	5. Broken lead at head.	5. Repair broken lead.
Wow or flutter	1. Motor binding, or motor end play adjusting screw (144) needs adjusting.	1. Lubricate motor bearings and adjust for minimum end play. Replace motor (139) if it is still not free.
	2. Capstan shaft (94) dirty or bent.	2. Replace or clean capstan shaft (94).
	3. Pressure roller(40)dirty, pitted, or worn.	3. Clean or replace pressure roller (40).
	4. Erase pad (65) worn or hardened.	4. Replace erase pad (65).
	5. Roller on record-play cam assembly touches pressure arm assembly when unit is in Record-Play position.	5. Loosen slab-head set screw (55), and rotate record-play cam assembly away from pressure arm assembly.
	6. Reel drive belt (14) slipping.	6. Replace reel drive belt (14).
	7. Tension too great on reel drive belt (14).	7. See "Fast Forward Adjustment".
	8. Excessive capstan and flywheel (94) end play.	8. Replace capstan and flywheel (94) in early production models. On late production models, adjust capstan end play adjusting screw (115) for minimum end play.
Fast forward speed improper.	1. Tension idler (18) binding.	1. Replace tension idler (18) if worn.
	2. Right-reel spindle (15) binding.	2. Clean dirt from right-reel spindle (15), or replace spindle if bent.
	3. Dirt or grease on rubber ring of right-reel spindle.	3. Clean rubber ring with alcohol.
	4. Reel drive belt (14) on wrong side of tension idler (18).	4. Shift reel drive belt (14) to correct side of tension idler (18).

TROUBLE CHART (CON'T) .

Symptom	Cause	Remedy
	5. Reel drive belt (14) reversed.	5. Rough side of reel drive belt (14) must contact right-reel spindle and fast transport pulley.
	6. Tension idler plate (117) binding.	6. Clean foreign matter from between baseplate and tension idler plate (117).
Rewind speed incorrect.	1. Spindle lever and bearing assembly(125), fast transport pulley (20) or left-reel spindle (21) dirty or binding.	1. If these parts are dirty, clean with a cloth dampened with alcohol. If binding, be sure they are free from adjacent parts.

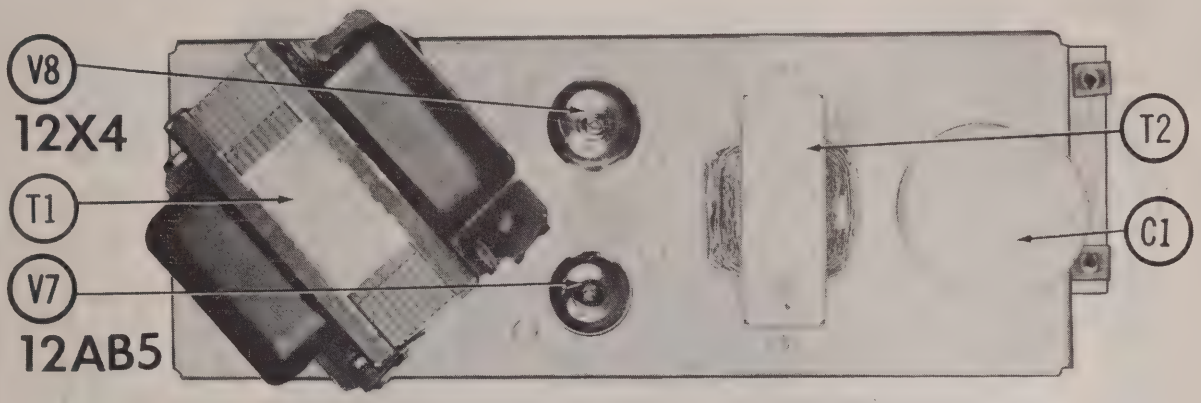
MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	11X1944-1AN	Forward-Rewind Knob
2	11X1944-2AN	Stop-Record-Play Knob
3	26P1538	#8-32 x 5/16" Bristol Head Set Screw
4	39P192-AF	Monitor-Tone and Off-On-Volume Knob
5	49P306-1AF	Head Cover
6	26P320-6	#4-40 x 5/8" O.H.P.R. Machine Screw
7	39P195-1	Stereo Volume Knob
8	26P1527-6	#6-32 x 1 1/4" O.H.P.R. Machine Screw
9	26P1532-6	#6-32 x 3/4" O.H.P.R. Machine Screw
10	11X1945-1AF	Stereophonic Control Panel Escutcheon
11	26P1458-6	#4-40 x 1/4" T.H.P.R. Machine Screw
12	45P2383-AV	Top Plate
13		Reel Retainer
14	72P010	Reel Drive Belt
15	11X1824-AV	Right Reel Spindle & Shaft Ass'y.
16	25P584	Retainer Ring
17		Washer
18	49P310	Tension Idler
19	26P676	#8-32 Set Screw
20	11X1984	Fast Transport Pulley, used with 15X243 Motor, Early Production
	41P1654	Fast Transport Pulley, used with 15X243 Motor, Late Production
	41P1733	Fast Transport Pulley, used with 15X263 Motor
21	11X1825-AV	Left Reel Spindle & Shaft Ass'y.
22		Washer
23		Right Brake
23A		Brake Pads
24	46P508	Tension Spring
25	26P1523	#2-56 Elastic Stop Nut
26	45P2454	Short Brake Release Link
27	45P2455	Long Brake Release Link

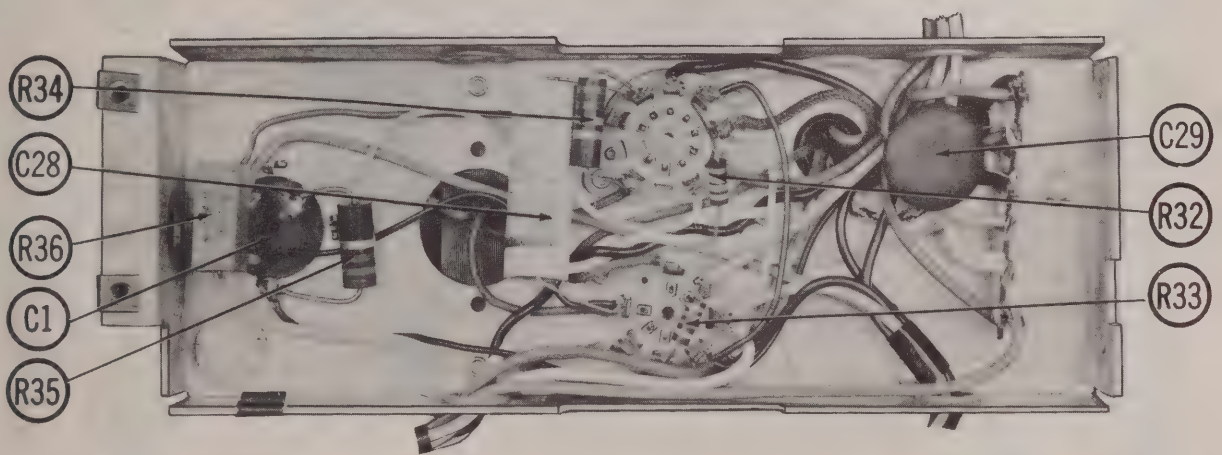
Ref. No.	Part No.	Description
28		Left Brake
29	46P508	Tension Spring
30	26P1523	#2-56 Elastic Stop Nut
31	11X1907	Head Bridge Casting Ass'y.
32	26P248	#6-32 x 3/8" H.H.S.T. Screw
33	45P2539	Head Retaining Spring
34	45P2545	Record Head Mounting Bracket
35	46P502	Tension Spring
36	11X1690	Record-Playback Head, Monaural
	65P139	Record-Playback Head, Stereo
37	11X1956	Erase Head Ass'y.
38	25P620	"C" Washer
39	25P371	Washer
40	11X673	Pressure Roller
41		Brake Actuating Cam
42		"C" Washer
43	11X1833	Pressure Arm Ass'y.
44	26P1058	#6-32 x 3/16" R.H.P.R.S. Machine Screw
45	45P2413	Head Hum Shield
46	25P596	"C" Washer
47	25P608	Washer
48	25P608	Washer
49	26P1058	#6-32 x 3/16" R.H.P.R. Sems Machine Screw
50		Washer
51	74X008-1	Tape Counter
52	46P498	Tension Spring
53	11X1828	Fast Transport Cam
54	11X1827	Record-Play Cam Ass'y.
55	26P1451	#8-32 x 5/16" Slab-Head Set Screw
56	46P491	Tension Spring
57	25P574	Retainer Ring
58	45P2556	Link Tape Wrap Guide Arm
59	50P125	Spring Clip
60	25P046	Fiber Washer
61	11X1910	Pressure Arm & Tape Guide Ass'y.
62	49P299	Tape Guide

Ref. No.	Part No.	Description
63	46P475	Tension Spring, Early Production
	46P517	Tension Spring, Late Production
64	46P479	Tension Spring
65	23P014	Erase Pad
66	46P496	Compression Spring
67	48P083	Ball Bearing
68		Stop-Record-Play Slide Plate
69	11X1838	Edit Lever & Pin Ass'y.
70	46P497	Tension Spring
71	11X1909	Erase Arm & Pad Ass'y.
72	11X1891	Baseplate
73	45P2410	Record Switch Actuator
74	11X1859-AF	Speed Change Knob & Shaft
75	32P130	Equalizing Switch
76	26P1451	#8-32 x 5/16" Slab-Head Set Screw
77	11X1870	Over-Travel Arm Ass'y.
78	46P503	Tension Spring
79		Part of Item #77
80	25P574	Retainer Ring
81	45P2411	Switch Lever
82	26P1450	#8-32 x 5/16" Cup Point Set Screw
83	11X1837	Fast Rewind Cam Ass'y. (Models 2810, 2819, 2820 with suffix "1" or "1A").
	11X1974	Fast Rewind Cam Ass'y. (Models 2810, 2819, 2820 with suffix "1B").
84	48P083	Ball Bearing
85	50P389	"E" Ring
86	11X1834	Shaft & Cam Actuator Ass'y. (Models 2810, 2819, 2820 with suffix "1" or "1A").
	11X1975	Shaft & Cam Actuator Ass'y. (Models 2810, 2819, 2820 with suffix "1B").
87	11X1979	Fast Forward Actuator & Post Ass'y.
88	45P2453	Idler Link, Early Production
	45P2562	Idler Link, Late Production
89	50P125	Retaining Clip
90	41P1711	Collar, Late Production
91	45P2452	Rewind Link
92		Part of Item #72
93	26P838	#8-32 Thumbscrew
94	11X1823	Capstan & Flywheel Ass'y.
95	46P497	Tension Spring
96	46P501	Tension Spring
97	11X1831	Record-Play Cam Ass'y.
98		Ball Bearing
99	45P2560	Take-up Actuator, Late Production
100	41P1707	Bushing, Late Production
101		Washer
102	26P1047	#8-32 x 3/8" H.H. Sems Mach. Screw, Early Production
	26P1548-3	#8-32 x 3/8" H.H. Sems Mach. Screw, Late Production

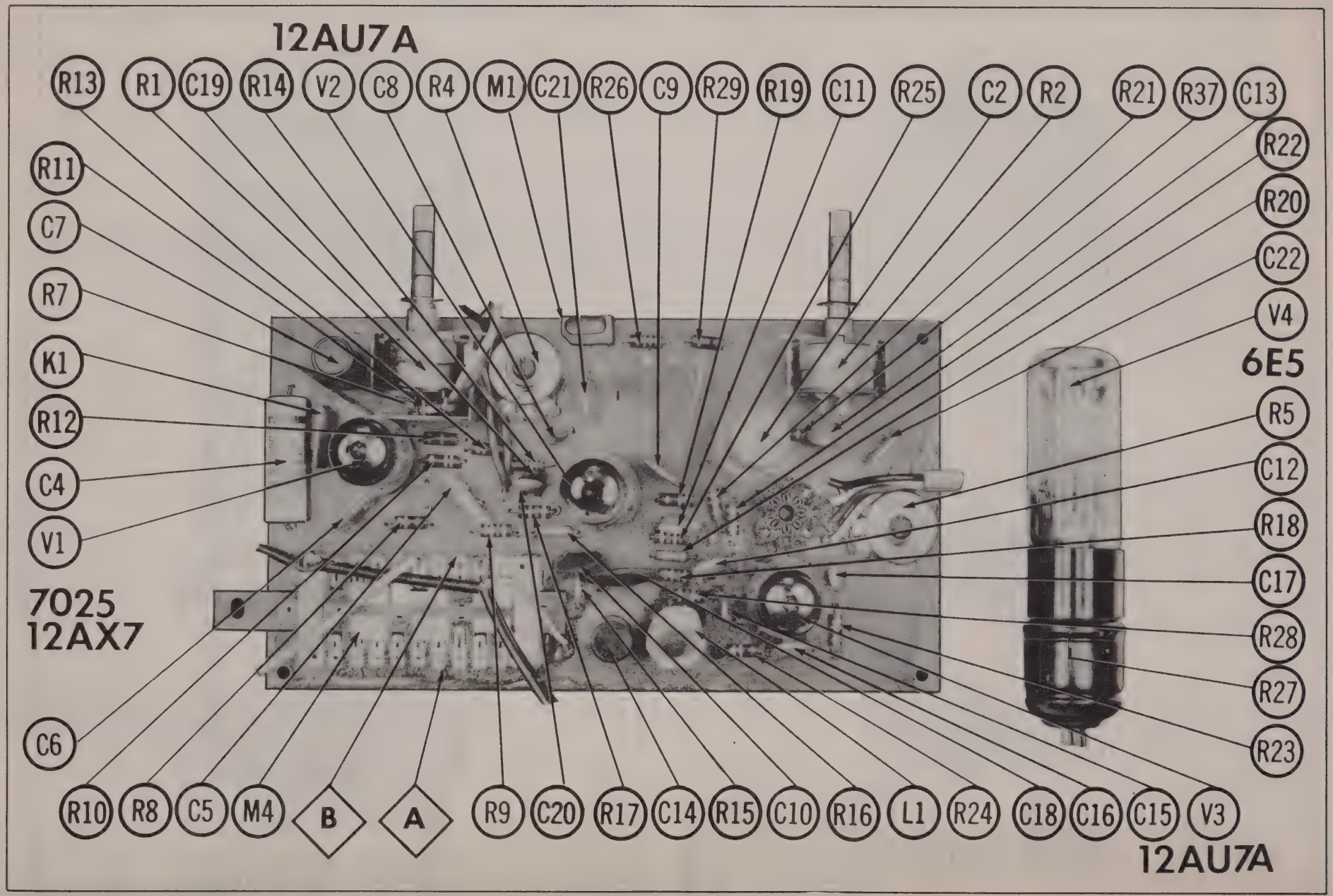
Ref. No.	Part No.	Description
103	25P496	Washer
104	50P208	Tube Socket Clamp
105		Washer
106	25P574	Retainer Ring
107	42P408	Speed Change Cam
108	26P676	#8-32 x 3/16" Set Screw
109		Spring
110	50P389	"C" Ring
111	72P011	Capstan Drive Belt
112	46P509	Tension Spring
113	11X1836	Capstan Bridge Ass'y.
114		Belt Shifter
115	41P589	Adjusting Screw
116	26P077	Hex Nut
117		Tension Idler Plate
118	46P537	Compression Spring
119	26P1523	#2-56 Elastic Stop Nut
120	46P507	Tension Spring
121	17X777	Pulley & Set Screw Ass'y. used with Motor 15X243
	17X790	Pulley & Set Screw Ass'y. used with Motor 15X263
122		Set Screw, Part of Item #121
123	46P536	Compression Spring
	46P520	Compression Spring (Model 2923)
124	46P493	Tension Spring
	46P483	Tension Spring (Model 2923)
125	11X1839	Spindle Lever & Bearing Ass'y.
126	72P011	Belt
127		Washer
128	25P574	Retainer Ring
129	41P1663	Reel Counter Pulley
130	25P694	Grommet
131	25P394	Washer
132	25P535	"E" Ring
133	26P365	#12-24 Hex Nut
134	25P224	Lockwasher
135		Part of Item #139
136	25P394	Washer
137	25P535	"E" Ring
138		Space, Part of Item #139
139	15X243	Motor Ass'y. Early Production
	15X263	Motor Ass'y. Late Production
140		Part of Item #139
141	45P2130	Fan, used with Motor 15X243
	45P2610	Fan, used with Motor 15X263
142	50P244	"C"Washer, used with Motor 15X243
	50P253	"C" Washer, used with Motor 15X263
143	17X664	Adjusting Screw & Bracket Ass'y.
144		Adjusting Screw
145	26P077	Hex Nut
146	45P2564	Motor Duct, Late Production
147	26P1070	#8-32 x 5/16" H.H.S.T. Screw
148	26P1278	#40-40 x 3/16" Bristol Cup Point Set Screw



POWER CHASSIS - TOP VIEW



POWER CHASSIS - BOTTOM VIEW



AMP CHASSIS - TOP VIEW

ELECT. PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Preamplifier	7025/12AX7	V5	Preamplifier	7025/12AX7
V2	AF Amplifier	12AU7	V6	Cathode Follower	6AT6
V3	Bias Oscillator	12AU7	V7	Output	12AB5
V4	Record Level Indicator	6E5	V8	Rectifier	12X4

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ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	30P292	AFH3-134	C1080	FP369.1	TMT-134	TVL-3744	
B	■40	350							
C	▲40	25							
C2	15	300	30P281	PRS350V16	BR1635	TC64	TD-16-350	TVA-1607	
C3	15	300	30P281	PRS350V16	BR1635	TC64	TD-16-350	TVA-1607	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA WEBCOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	.25	50		30P293	P288N-25		CUB2P25	GEM-2025	2TM-P25	
C5	20000			30P344	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C6	10000			30P266	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	.05	400		30P283	P415lN-047	DF-503	BC6S47J	ACE615	4SE-S47	
C8	2.2			30P333	NPO-SI 2.2	TCZ-2R2	C10V22C	CNO-522	5TCCB-V2.2	
C9	10000			30P266	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	①
C10	10000			30P266	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C11	5000			30P324	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C12	50000			30P283	BPD-05	DF-503	CUB6S5	GEM-615	5HK-S5	
C13	3900			30P336	BPD-004	DD-392	L10D39	JL-239	5GA-D39	
C14	.1	50		30P289	P215lN-1	DF-104	BC2P1J	ACE401	2SE-P10	
C15	470		10%	30P298	DI-470	MD-471	5R5T47	JL-347	5GA-T47S 10%*	
C16	2000		10%	30P286	DI-2000		1R5D2	JL-210	5GA-D2S 10%*	
C17	470		10%	30P298	DI-470	MD-471	5R5T47	JL-347	5GA-T47S 10%*	
C18	20000			30P344	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	①
C19	150		10%	30P303	DI-150	DD-151	L10T15	JL-315	5GA-T15S 10%*	
C20	68		N750 10%	30P345	N750-DI 68	DTZ-68	C10Q68U	CN7-468	5TCU-Q68S 10%*	
C21	10000			30P266	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	①
C22	10000			30P266	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	①
C23	.25	50		30P293	P288N-25		CUB2P25	ACE6022	4SE-P22	
C24	.05	400		30P283	P415lN-047	DF-503	BC6S47J	ACE615	4SE-S47	
C25	.05	400		30P283	P415lN-047	DF-503	BC6S47J	ACE615	4SE-S47	
C26	10000			30P266	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C27	.25	50		30P293	P288N-25		CUB2P25	GEM-2025	2TM-P25	
C28	.1	400		30P309	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C29	10000			30P266	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

① Preamp. (14X270-4) uses .05mfd 400V in this application (Part #30P283).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K	½	31P132					Volume
B	Switch							Power On-Off
R2A	500K	½	31P133					Tone
B	Switch							Monitor
R3	250K	½	31P134-1					Stereo Volume
R4	2meg	½	31P122					Eye Adjust
R5	10K	½	31P123					Hum Adjust

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	WEBCOR PART No.	NOTES
R6	1meg		29M1052	
R7	470K		29M4742	
R8	10K		29M1032	
R9	47K		29M4732	
R10	3.3meg		29M3352	Note 1
R11	150K		29M1542	
R12	2700Ω		29M2722	
R13	12K		29M1232	
R14	150K		29M1542	
R15	150K		29M1542	
R16	1800Ω		29M1822	
R17	470K		29M4742	
R18	47K		29M4732	
R19	4700Ω		29M4722	
R20	8200Ω		29M8222	
R21	4700Ω		29M4722	

ITEM No.	RATING OHMS	RATING WATT	WEBCOR PART No.	NOTES
R22	47K		29M4732	
R23	10K		29M1032	
R24	10K		29M1032	
R25	470K		29M4742	
R26	15meg		29M1562	Note 2
R27	560K		29M5642	
R28	47K		29M4732	
R29	1000Ω		29M1022	
R30	2.2meg		29M2252	
R31	4.7meg		29M4752	
R32	330K		29M3342	
R33	47K		29M4732	
R34	15K	1	29M1533	
R35	270Ω	2	29M2714	
R36	1500Ω	5	29P079	
R37	47K		29M4732	

Note 1. Preamp. (14X270-4) uses 1meg in this application (Part #29M1052).
Note 2. Preamp. (14X270-4) uses 3.3meg in this application (Part #29M3352).

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	WEBCOR PART No.	REPLACEMENT DATA
K1	Hi Freq. Filter	47mmf, 2200Ω, 2.2meg	62P015	
K2	Audio Detector Coupling	10000mmf, 820Ω, 5600Ω, 18K, 27K, 150K, 150K, 220K	62P021	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA WEBCOR PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	65P125						

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .47A	540 VCT @.060A	12 VCT @1.8A	68P052-4						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5000Ω	3-4Ω	67P060-3	26S49	A-3019	AU-604	A-8092	26S49	S-5Z	

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	WEBCOR PART No.	QUAM PART No.	
SP1	6" x 9"	PM	7-8Ω	76P051 ①	69A3Z7	① CH. 14X270-4, 14X272-4, & 14X277-1
SP2	4"	PM	22Ω	76P050 ①	4A1Z22	
SP3	4"	PM	22Ω	76P050 ①		
	6" x 9"	PM		76P083		
	4"	PM		76P077-1		
	4"	PM		76P077-1		

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	WEBCOR PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1		65P124-2	K1616	IT1 ①			① 2 Required

MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M2	Record-Playback Head Stereo	65P139	
M3	Erase Head	11X1956	
M4	Switch	32X117	Record-Playback
M5	Switch	32P130	Equalizing
M6	Switch	32P131	Muting
M7	Solenoid		
	Microphone	65X132-3	
	Printed Board	62P014-4	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Cabinet	92X084-1	Grey, Models 2910 & 2919
Cabinet	92X087-1	Mahogany, Model 2955
Cabinet	92X087-2	Limed Oak, Model 2955
Cabinet	92X087-3	Maple, Mode 2955
Cabinet	92X087-4	Walnut, Model 2955
Cabinet	92X078-1	Mahogany, Model 2923
Cabinet	92X078-2	Blond, Model 2923
Cabinet	92X078-3	Cherry, Model 2923
Legs	40P345-1	Mahogany, Model 2923
Legs	40P345-2	Blond, Model 2923
Legs	110X114	Cherry, Model 2923

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) .....Use BELDEN No. 8401

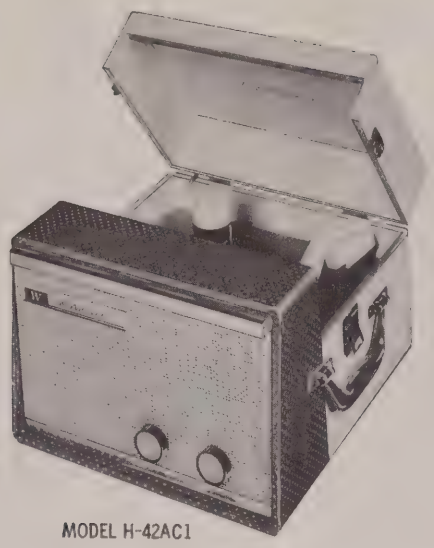
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

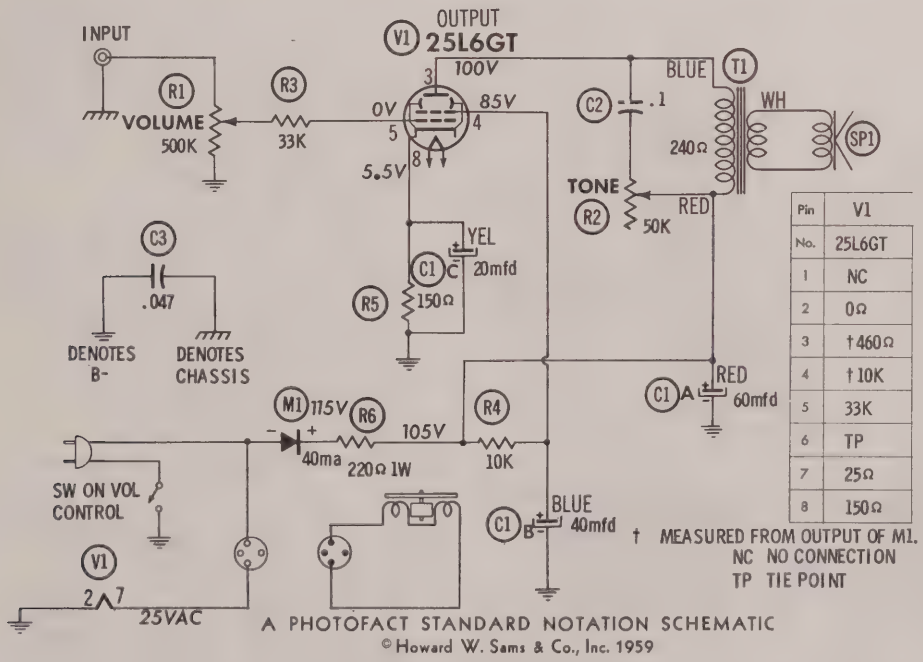
WESTINGHOUSE MODELS H-42AC1, H-42AC2

WESTINGHOUSE MODELS
H-42AC1, H-42AC2



MODEL H-42AC1

TRADE NAME	Westinghouse Models H-42AC1, H-42AC2
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Metuchen, N. J.
TYPE SET	AC Operated One Tube Phono Amplifier With 45RPM Automatic Record Changer
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 41 Watts, .39 Amp. @ 117 Volts AC (Less Motor)



Pin No.	V1 25L6GT
1	NC
2	0Ω
3	†460Ω
4	†10K
5	33K
6	TP
7	25Ω
8	150Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 458 FOLDER 18

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Output	25L6GT			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	CE-101		BBRT84215	WT407		TVLS-3442.9*	
B	40	150							
C	20	150							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C3	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	VC-157	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	
R2A	50K	½	VC-156	B-31	A47-50K-S	Q11-123	U35	Tone
B	Shaft			Not Req.	KSS-?	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Westinghouse PART No.	NOTES
	OHMS	WATT		
R3	33K			
R4	10K			

ITEM No.	RATING		Westinghouse PART No.	NOTES
	OHMS	WATT		
R5	150Ω			
R6	220Ω	1		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2350Ω	3-4Ω	TR-109	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

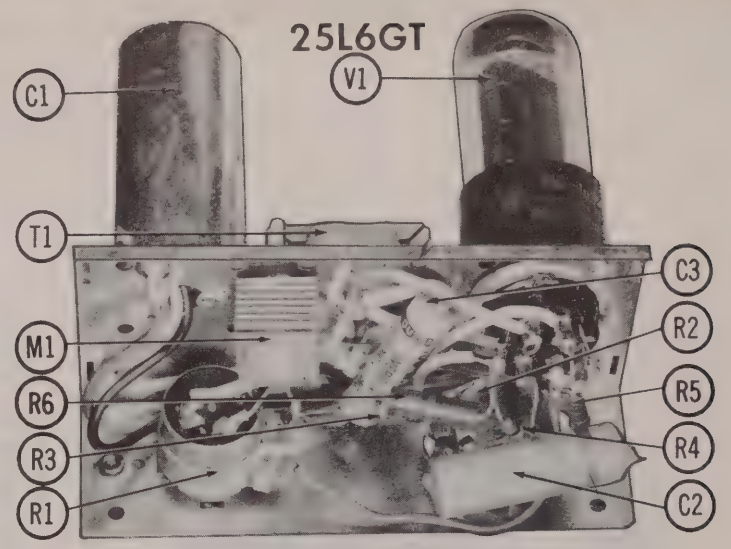
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	SP-401	4A07	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	Westinghouse PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.040A	SR-101 ①	1234AH ① HA154 ②	T065 ① SD-94 ②	65A ① K200 ②	① Selenium Type ② Silicon Type

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	Westinghouse PART No.	WW ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2	AO-414	414-1	N8-1	14	Not Req.	31	† CRA-55LP or ♦ CRA-55LPD	† Jewel ♦ Diamond

NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Westinghouse PART No.	JENSEN PART No.	WALCO PART No.	
M3	AS-100	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS or ♦ W-64MGD	† Jewel ♦ Diamond

CABINETS & CABINET PARTS

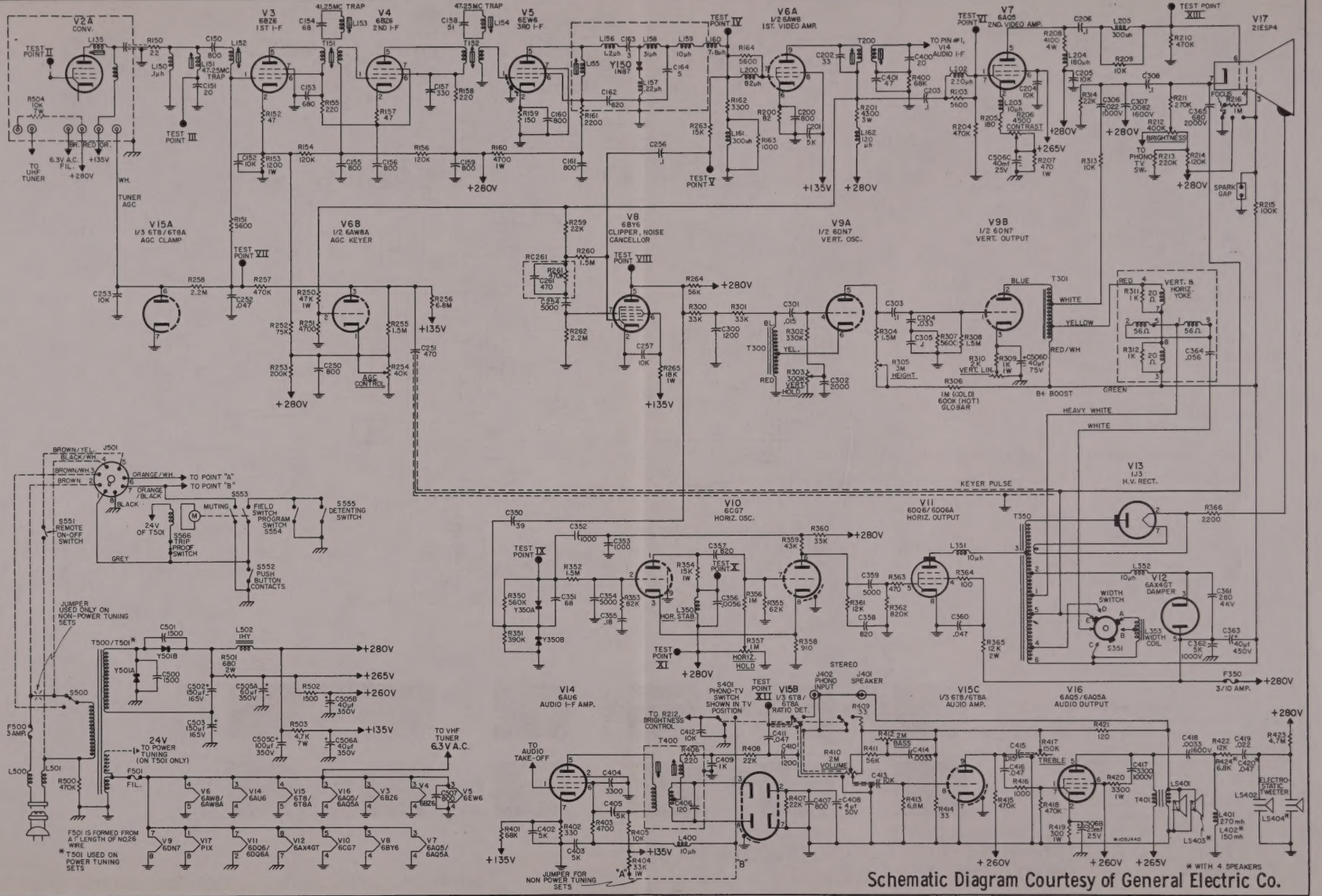
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KN-275	Volume-On-Off, Tone
Cabinet	CB-421	Red and White, Model H-42AC1
Cabinet	CB-422	Black and White, Model H-42AC2

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

GENERAL ELECTRIC MODELS 21C3567, 21C3570, 21C3571, 21C3573, 21C3575, 21C3576, 21C3580, 21C3581, 21C3585, 21C3586, 21T3559('U4' LINE)


V2A CONV.
V3 6BZ6 1ST I-F
V4 6BZ6 2ND I-F
V5 6EW6 3RD I-F
V6A 1/2 6AW8 1ST. VIDEO AMP.
V7 6AQ5 2ND. VIDEO AMP.
V17 21ESP4
V15A 1/3 6T8/6T8A AGC CLAMP
V6B 1/2 6AW8A AGC KEYER
V8 6BY6 CLIPPER, NOISE CANCELLOR
V9A 1/2 6DN7 VERT. OSC.
V9B 1/2 6DN7 VERT. OUTPUT
V13 1/3 H.V. RECT.
V10 6CG7 HORIZ. OSC.
V11 6DQ6/6DQ6A HORIZ. OUTPUT
V12 6AX4GT DAMPER
V14 6AU6 AUDIO I-F AMP.
V15B 1/3 6T8/6T8A RATIO DET.
V15C 1/3 6T8/6T8A AUDIO AMP.
V16 6AQ5/6AQ5A AUDIO OUTPUT
TEST POINT II
TEST POINT III
TEST POINT IV
TEST POINT V
TEST POINT VI
TEST POINT VII
TEST POINT VIII
TEST POINT IX
TEST POINT X
TEST POINT XI
TEST POINT XII
TEST POINT XIII
41.25MC TRAP
47.25MC TRAP
Y150 1N87
TO PIN #1, V14 AUDIO I-F
TO UHF TUNER
6.3V A.C. FIL.
+280V
+265V
+260V
+135V
TUNER AGC
AGC CONTROL
BRIGHTNESS
CONTRAST
FOCUS
SPARK GAP
TO PHONO TV SW.
TO R212, BRIGHTNESS CONTROL
S401 PHONO-TV SWITCH SHOWN IN TV POSITION
J402 PHONO INPUT
J401 SPEAKER
STEREO
TO AUDIO TAKE-OFF
BASS
TREBLE
2M VOLUME
T301
T350
T400
T401
L401
L402
L403
L404
VERT. & HORIZ. YOKE
ELECTRO-STATIC TWEETER
WIDTH SWITCH
WIDTH COIL
HORIZ. HOLD
VERT. HOLD
VERT. LIN.
HEIGHT
B+ BOOST
1M (GOLD) 600K (HOT) GLOBAR
KEYER PULSE
HEAVY WHITE
WHITE
YELLOW
RED/WH
GREEN
BLUE
RED
YEL.
BROWN/YEL.
BLACK/WH.
BROWN/WH.
BROWN
ORANGE/WH.
ORANGE/BLK.
BLACK
GREY
TO POINT "A"
TO POINT "B"
J501
S500
S501 REMOTE ON-OFF SWITCH
S502 TRIP PROOF SWITCH
S503 FIELD SWITCH PROGRAM SWITCH
S504 PUSH BUTTON CONTACTS
S505 DETENTING SWITCH
MUTING
24V OF T501
JUMPER USED ONLY ON NON-POWER TUNING SETS
T500/T501*
Y501A
Y501B
24V TO POWER TUNING (ON T501 ONLY)
TO VHF TUNER 6.3V A.C.
F500 3 AMP.
F501 FIL.
F350 3/10 AMP.
L500
L501
L502 1HY
L503
L504
L505
L506
L507
L508
L509
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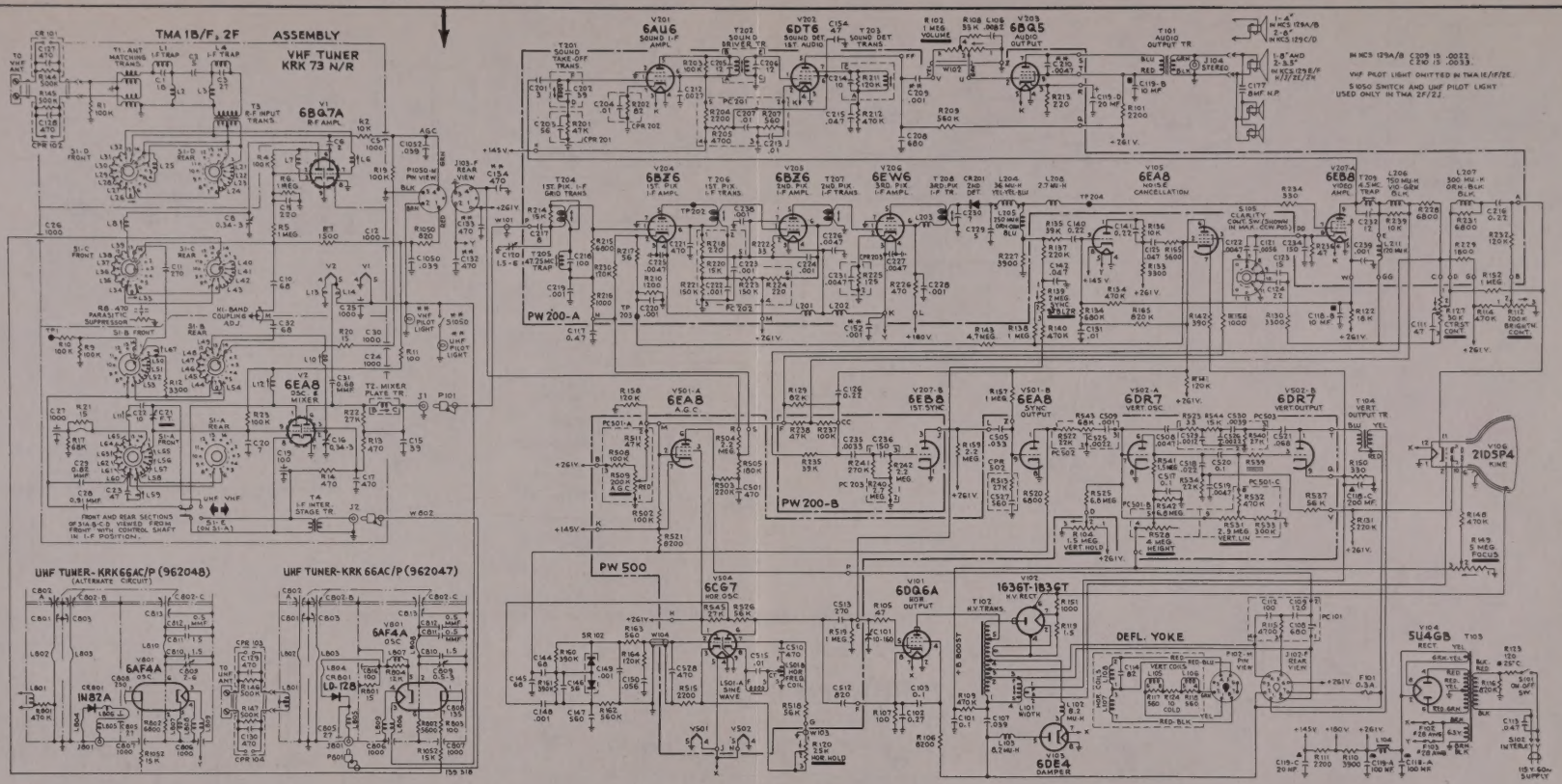
L541
L542

← GENERAL ELECTRIC

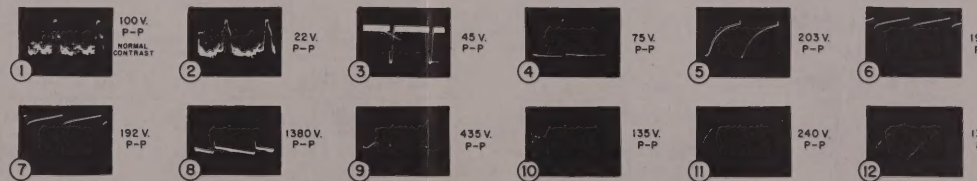
RCA VICTOR



All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within ±20% with 117 v, a-c supply.

*Measured with 1 megohm, ½ watt resistor in series with meter probe.

Balloons ①② etc., shown on schematics indicate points of observation of the waveforms shown below the schematic.



R C A VICTOR MODELS 210DK595, U, 210DK596, 210DK597, 210DK635, U, 210DK636, 210DT572, U, 210DT575, 210DT577(CH. KCS. 129A, B, C, D, E, F)

Schematic Diagram Courtesy of Radio Corporation of America

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